The Second International Mathematics Study In The French-language Schools Of Ontario

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Project Title: The Second International Mathematics Study in the French-language Schools of Ontario

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ABSTRACT

The Second International Mathematics Study (SIMS) in Ontario had a small sample of 242 grade 8 francophone students included as a part of the provincial sample. The results obtained by this group of francophone students on the French translation of the SIMS items were overall some 15 per cent below the provincial average.

During the course of the SIMS it was noted that the French translations for many of the test items were not equivalent to the English and there was speculation as to the effect this had on francophone student achievement.

This study set out to determine what effects the item translations and the small sample size may have had on the results reported in the SIMS for French-language grade 8 students in Ontario.

The first task of the project was to produce a valid French-language version of the cognitive tests. The basis for this version was the French-language tests that had been administered to grade 8 students as part of the SIMS. This existing translation was examined for accuracy and a revised version was produced which was a more satisfactory parallel to the original English-language tests.

In examining the existing French version of the tests, the first question considered was whether the existing translation of the test had preserved both the exact content of each item and its language level. This question could be answered by having qualified educators check the translation for accuracy and language level. The second question was: Where language level was judged to differ from the original, would the difference affect the level of difficulty of the item? This question could not be answered without empirical evidence on how different item wordings affect performance.

This led to the second task of the project, to administer the revised items to an enlarged sample of 408 francophone students and to examine the results.

The students in our sample, using the revised test items, still found the tests to be more difficult than did their anglophone counterparts in the SIMS. Over the entire 180 items the per cent correct score was 44 per cent correct, for the students in our sample, an improvement of 9 per cent over the francophone SIMS results, but still not as high as the Ontario average of 50 per cent correct.

It is difficult to assess exactly how much effect the revisions made to the test items had in producing the generally higher per cent correct scores obtained by our sample over the SIMS sample. There is however, some evidence to suggest that the revised test items played an important role in achieving the higher scores. The results obtained on the revised items in the core form, indicated that higher results were obtained more often on the revised items than on the unrevised ones. Further the percentage of students omitting questions was lower, perhaps indicating a lower level of frustration and making the tests seem easier.

The results obtained by our enlarged student sample and revised test items is very likely a more accurate reflection of mathematics achievement in grade 8 in francophone schools in Ontario than are the results obtained for this stratum of the population in the SIMS.

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Description of Activities

1. Introduction

The first task of this project was to produce a valid French-language version of the cognitive tests. The basis for this version was the French-language tests that had been administered to students in Grade 8 as part of the Second International Mathematics Study (SIMS). This existing translation was examined for accuracy, however, and a revised version was then produced which was a more satisfactory parallel to the original English-language tests.

Considerable caution needs to be used when interpreting the results of tests administered in more than one language. To make valid comparisons between English-speaking and French-speaking students, it is not enough to know whether the students had the opportunity to learn the material on which they were tested and whether they were all tested with the same items. One must also know whether these items are truly equivalent in the two languages.

In examining the existing French-language version of the cognitive tests, the first question considered by the project was whether the existing translation of the test into French had preserved both the exact content of each item and its language level (the level of sophistication of the language in which the item is couched). This question could be answered by having qualified people check the translation for accuracy and language level. Where the language level was judged to differ from that of the original, a second question had to be asked: Would the difference in language level affect the level of difficulty of the item? This question could not be answered without empirical evidence on how different item wordings affect performance.

This part of the report will first discuss the directives put in place by the Second International Mathematics Study in anticipation of the difficulties in evaluation which might be caused by linguistic and cultural bias. It then considers in some detail the instances of inappropriate translation actually found in the original SIMS French-language tests and the steps taken by the project to produce a valid version of these tests for use in the French-language schools of Ontario.

2. International Directives for Translation

2.1. Tasks

The SIMS had been well aware of the difficulties of conducting a study encompassing several different languages, cultures, systems of education and curricula, and the international committee issued guidelines to address these difficulties. Each National Centre was asked to complete the following tasks for the collection of items and to carry out a pilot study with approximately 200 students (IEA draft report, 1985)

Translation: by two independent translators with resolution of differences by the National Centre and checking by a mathematician. In translating the items, national notation and usage were to be employed but care was to be taken that the format, mathematical intention and relative difficulty of the items were not altered during the translation.

Printing: the format and spacing of master copies was to be adhered to, with the hope that no extra element of difficulty due to unclear printing was introduced.

Sampling the sample for trialing was to consist of approximately 200 students for each population level from a judgment sample of schools representing adequately the educational system as a whole.

Administration: according to detailed instructions provided by the International Coordinating Unit.

These guidelines were not followed in Ontario. Since France had completed these tasks and had produced a French version of the tests, Ontario had initially judged it unnecessary to prepare another translation. Upon inspection of the tests translated in France, however, it became clear that they would have to revised for use in the Ontario French schools. The need for revision was acknolwedged because the mathematical terms used in Franco-Ontarian schools often differ from those used in France, because some non-mathematical vocabulary in the tests would not have been familiar to Franco-Ontarian students, and because the items did not adhere to the format set out in the SIMS guidelines.

Unfortunately, however, time and budget constraints did not allow for a thorough review of the tests, and only the most blatant errors were corrected.

2.2. Problems of Language Bias

Problems in the translation and adaptation of items to the various languages had also been discussed by the International Mathematics Committee (IMC), when reviewing items after their pilot administration in the participating countries. Many problems had indeed been encountered. In their reports on trialing, the National Centres had also drawn attention to items which presented translation difficulties. The problems highlighted included:

a. cases in which two different English words (e.g., symmetry/reflection, number/frequency) translated to a single word in the language of a non-English-speaking country. Thus, for example, the French translate both 'axis of symmetry' (item 103) and 'line of symmetry' (item 090) as 'axe de symétrie'. On the other hand, 'reflection' (item 096) is translated as 'symétrie axiale', whereas 'reflection' in the stem of item 030 is translated as 'symétriques par rapport à une droite'.

b. inability to translate items involving amounts of money where a decimal point is used (e.g., $1.38) to an equivalent in countries such as Japan where no decimal point is used in everyday money transactions.

Disparities such as the above did not seem to the IMC serious enough to warrant the elimination of an item. The IMC thought that "this lack of agreement as to translation is more apparent than real for it does not change the item or cause any difficulty."

2.3. Problems of Cultural Bias

According to the IEA draft report, National Centres were instructed to identify items which cultural considerations would be likely to make more difficult in some countries than in others. This caused a number of items to be rejected, most of them concerned with the utilization of mathematical knowledge and skills in everyday situations. Finding everyday situations which would have meaning for students from a wide range of cultures proved quite a stumbling block. It was pointed out that in some countries students would be unlikely to be familiar with the notion of a fence around a garden, for example.

An item dealing with cooking a whole turkey, originally stated in non-metric units (30 minutes per pound), proved unrealistic when translated into metric units and was thus rejected. This item was rejected for cultural reasons as well, since cooking a whole turkey would not be a familiar experience for children from a number of countries.

Interestingly, the National Centres did not comment on a number of other items which might have been expected to place students in some countries at a disadvantage. This is probably because the textbooks in use in those countries also contain examples of the type employed in the IEA tests. But it must be conceded that for these students the situations referred to in some items are "everyday" situations only in a vicarious sense.

During translation, National Centres were able to change such elements as proper names, place names and monetary units to those with which their students would be familiar, where this seemed helpful and where the nature and relative difficulty of the item would be unchanged. National Centre personnel made an effort to reduce the effects of cultural bias, examining each item several times, but they recognized that for some items and some settings a degree of bias could well remain.

3. Revising the French Version of the Tests for Ontario

3.1. The Team

Five teachers and two university professors were asked if they would be willing to compare the French version of the tests to the original English one and to correct errors of translation. Before seeking a commitment, we described the background of the problem and the suggested method of correction, and sent the test to them in both French and English. Six of the seven people we had approached agreed to assist the project. A one-hour workshop was then conducted with each of them separately to explain the types of mistranslation we were aware of and to discuss useful strategies for their correction. The participants were encouraged to criticize and amend our suggestions and to propose their own criteria and strategies for the reformulation of items, keeping in mind that the corrected items were to be faithful both to the original English text and to the French terminology used in textbooks and in the classroom.

The following were members of the team:

André Ladouceur	(Ottawa)
Janine Servais	(Toronto)
Maurice Poirier	(Toronto)
Serge Morissette	(Hearst)
Richard Bertrand	(Quebec City)
Marcel Leclerc	(Quebec City)

3.2. Examination of the Items

The 180 items were examined by these six bilingual mathematics educators and by one of the project members. The two people from Quebec City worked together on the examination, while the other members of the team worked independently. A translated item was considered in need of revision if one of the seven examiners thought it differed in some way from the corresponding item in English. Differences detected were classified as follows:

a. Differences in level of language difficulty,

b. The presence of mathematical terms that, though they are correct translations, differ from the terms used in the students' textbooks,

c. Differences in level of abstraction due to phrasing,

d. Differences in intended meaning,

e. Differences in emphasis and/or in clarity of notation, and

f. Minor errors in translation (e.g., typographical errors not affecting meaning)

Tables 1-5 show the classification of differences for each of the five test forms, by item and examiner. There are six columns for seven examiners because the two people who worked together were put into one column. Also the codes in the last column are p, q, and w rather than a to f as described above. This is because the examiner did not give reasons for the changes but inserted changes for single words within an item (w), for part of an item (p), or for a complete rephrasing of an item (q).

In sum, the examination by the team of bilingual mathematics educators revealed that the French translation differed in some significant way from the English original in 130 out of 180 items (about 70% of the test).

Booklet 3L

Question Number	L	G	P	H	M	IN
1						
2						
3						
4	a	a	a	a		q
5	e,f		e,f	e,f	a	q
6		a			a	q
7	a		a	c	a	p
8					d,e	q
9	a	a	a	a	e	q
10					a	q
11	a	a,e	a,e	a,b,c	a,d,e	q
12	d	d	d	d	d	q
13						w
14					d,e	q
15					a	p
16						
17	f		f	f		q
18						
19						w
20					a	q
21						p
22						q
23					a	q
24	f	f	?	f	d	p
25	a		?	a,c,e		p
26						
27	a		e,f	e,f	a,e,f	p
28		a				q
29		d				q
30					a,c,e	p
31						
32						
33	d		d	d	a	
34						q
35	a,d		a?	a,d?	a,d	q
36					a	
37						
38						
39						p
40					d,e	w

Booklet 2LA

Question Number	L	G	P	H	M	IN
1					f	
2	d,e	d,e	d,e	d,e	d,e	q
3	a,c	c	c	a	a,b	q
4					f	p
5					e	q
6	c,e	e	c,e	c,e	c,e	w
7		f				
8					b	
9						p
10	a,e	a		e	e	q
11						
12						p
13					e	q
14						
15		c				w
16	d,e	d,e	d,e	d,e	d,e	q
17					a,d,e	w
18	f		f	f	a,f	p
19					e	q
20		e				p
21						p
22	a,d	a	f	b,d	d	
23	a,e	a,e	e	a,e	f	w
24						
25					e	p
26						
27						
28						w
29	a,f	a,f	d,f	a,b		q
30						
31						
32		d,f				w
33						p
34	c	c	c	c,d,e		
35	c	c	c	d	e	p
						q

Booklet 2LB

Question Number	L	G	P	H	M	IN
1						
2	d	d	d	d	b,d	w
3						
4	a,c		?	b	b	w
5					b	
6						w
7					a,e	p
8					f	w
9					e	p
10						
11		a,c,e			b	
12	d		d,e	d		
13						?
14	a,e		a,f	c,d,e	a,c	p
15					d	p
16		e				
17					e	
18	a	a	a	a	a	p
19						
20						
21					e	
22					b	w
23	a	a	a	a	a	
24						w
25		d,e				w
26						
27	a,e	e	e,f	a,b	a,f	p
28		e			e	
29						
30						
31	?	e	e	e	e	w
32						
33						
34						
35						

Booklet 2LC

Question Number	L	G	P	H	M	IN
1						q
2					f	w
3					f	
4					f	
5						
6					b,e	w
7					b,e	p
8						w
9						
10						w
11	d		d	d	e	
12						
13						
14		f	a,c	a		
15					a	
16						
17						
18						
19					f	p
20			a	a		
21						
22						
23	a,d	a,e	a,d	a,d	d	p
24						
25	?	a,f	a	a	a,e	?
26		c,d,e			a,f	
27					f	w
28						
29					e	w
30	a		a	a		q
31						?
32	a		a	a		p
33					f	
34	d		d	d,f	d	
35						

Booklet 2LD

Question Number	L	G	P	H	M	IN
1	d	d	a,d	a,e	a,f	w
2						w
3						
4						
5	c,d	c,d	c,d	a,b,d	a,d	w
6					a	p
7	d	c,d	d	b	d,e	
8					e	q
9					a	w
10					f	
11					f	p
12						p
13						
14	d		d	d	a	
15					f	w
16						
17					a	w
18					b	
19						
20					a	p
21						w
22	a,d		a,d	a,d		q
23						
24	e	e	e	e	d	w
25						
26						
27	e	d	e	e		?
28						
29	a,c	a,c	b	a,?	a	p
30	?	a	a	a	f	
31						
32					a	
33						w
34	e		e	e	e	
35						c

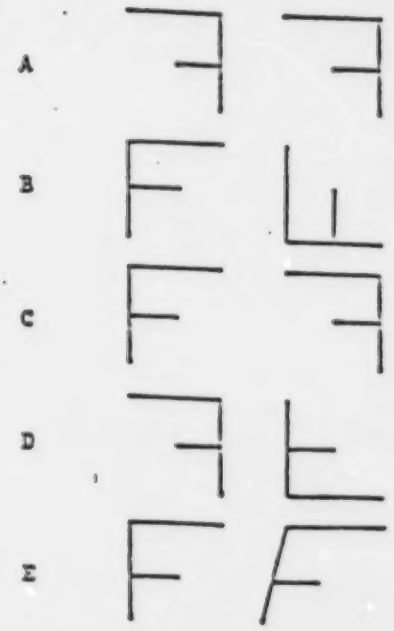
3.3. Examples

The following describes a number of items for which there were disparities in the translation, and provides some data on the success rate of both English speaking and French speaking students with these items. The data come from the 1982 administration of the IEA tests in Ontario using the uncorrected French translation.

The item reproduced below, for example, was answered correctly by 79% of the students responding to the English version of the test, but only by 25% of those responding to the French one. A look at the item reveals a number of differences between the two: (a) in the French version there is no mention of *pairs* of figures; (b) the English text makes it clear that there is *one* correct answer, while the French does not; and (c) the English text uses both *reflection* and *flip*, whereas the French text refers only to symmetry.

In which diagram below is the second figure the image of the first figure under a reflection (flip) in a line?

Parmi les figures suivantes, quelles sont celles qui sont symétriques par rapport à une droite?



The following comments on items are additional examples of disparities in translation:

- Item 29 in Form 4. (error category: a, c; percent correct: English 32, French 23)

  The English item includes the familiar words "turn", "flip", and "slide", in addition to the technical terms "rotation", "reflection", and "translation". The French item uses technical terms only.

- Item 7 in Form 0. (error category: c; percent correct: English 70, French 42)

  The English item contains the explicit and detailed sentence "shows a cardboard cube which has been cut along some edges and folded out flat" versus the very formal "développement d'un cube". Also the second sentence "which two corners will touch corner P?" is much simpler than the French "quels points seront confondus avec le point P"?.

- Item 11 in Form 3. (error category: d; percent correct: English 31, French 16)

  In this case the meaning was changed completely in the translation. "Turn left and move one unit" is not equivalent to "On fait un pas à gauche" (which is more likely to mean simply "step to the left"). The correct answer to the English version is A (1,-2) whereas the correct answer to the French one is C (0,-1).

- Item 23 in Form 3. (error category: d; percent correct: English 43, French 23)

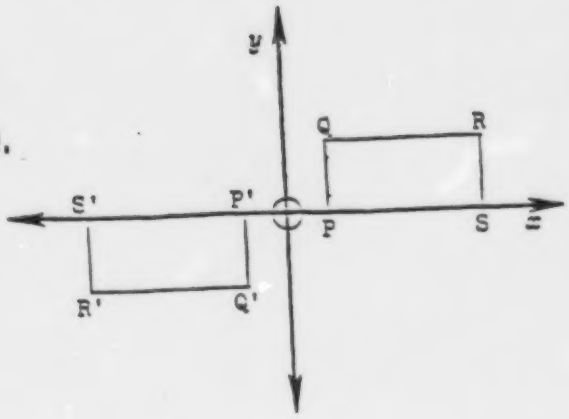
  Response B in French is entirely different from the English one. B is an incorrect response in the English version of the item, but a correct one in the French version. Thus the item has two correct responses in French, instead of one.

- Item 27 in Form 4. (error category: e; percent correct: English 26, French 14)

  The variables *a*, *b*, *x*, and *y* are in italics in English but not in French. For this reason it is difficult to understand the French item. Also in the English version the clause "including the deposit" is underlined, whereas it is completely missing from the French version.

The above are only a few of the more striking disparities. In addition, many items used relatively unfamiliar words in their French version: e.g., "consommé" vs. "eaten" in item 4 Form 0, "juxtaposés" vs. "put together" in item 18 Form 2, "se transforme par rotation" vs. "can be rotated (turned)" in item 32 Form 3.

29.



PQRS is a rectangle. Its image after a transformation is the rectangle P'Q'R'S', as shown above. The transformation used could have been

A a rotation (turn) about the origin

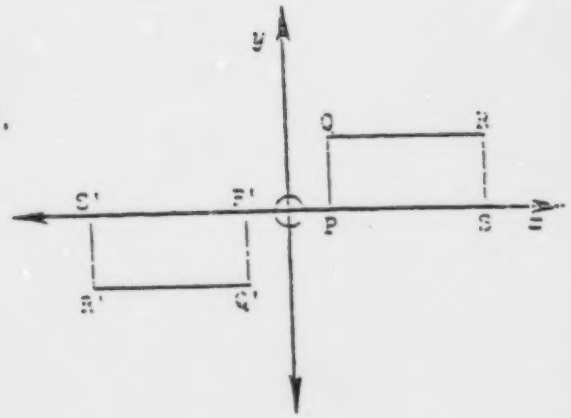
B a reflection (flip) in the y-axis.

C a translation (slide) parallel to the x-axis

D a reflection (flip) in the x-axis

E a translation (slide) parallel to the y-axis

29.



Sur le dessin, PQRS est un rectangle, et son image par une transformation est le rectangle P'Q'R'S'. Cette transformation est:

A une rotation autour de l'origine

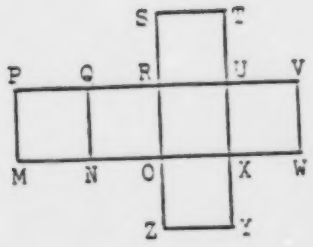
B une symétrie d'axe y

C une translation parallèlement à l'axe x

D une symétrie d'axe x

E une translation parallèlement à l'axe y

7.



The diagram shows a cardboard cube which has been cut along some edges and folded out flat. If it is folded to again make the cube, which two corners will touch corner P?

A corners Q and S

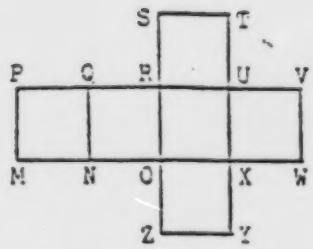
B corners T and Y

C corners W and Y

D corners T and V

E corners U and Y

7.



Ce schéma représente le développement d'un cube. Si on reforme le cube, quels points seront confondus avec le point P?

A Les points Q et S

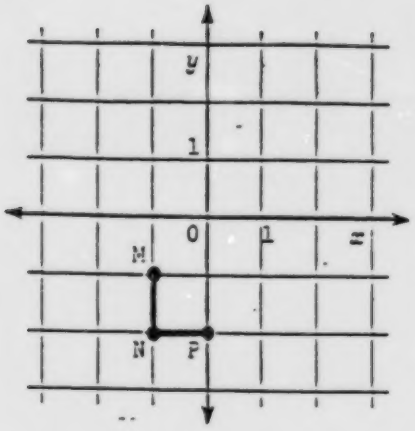
B Les points T et Y

C Les points W et Y

D Les points T et V

E Les points U et Y

11.



Suppose you start at point M(-1,-1), move a distance of one unit to N(-1,-2), then turn left and move one unit to the point P(0,-2). If you again turn left and move one unit, you will now be at the point with coordinates

A (1,-2)

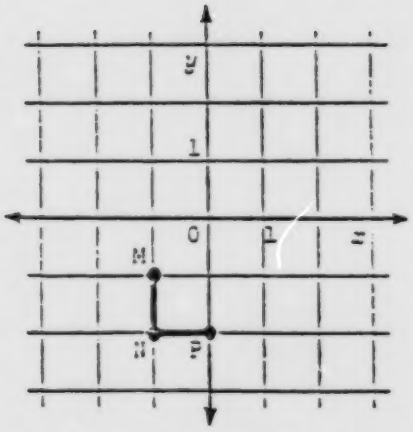
B (0,-3)

C (0,-1)

D (-1,-2)

E None of these

11.



Partant du point M(-1,-1), on se déplace vers le point N(-1,-2), on fait un pas à gauche et on arrive en P(0,-2). En faisant à nouveau un pas à gauche, on arrive au point de coordonnées:

A (1,-2)

B (0,-3)

C (0,-1)

D (-1,-2)

E Aucun de ces points

23. A quadrilateral MUST be a parallelogram if it has

A one pair of adjacent sides equal

B one pair of parallel sides

C a diagonal as axis of symmetry

D two adjacent angles equal

E two pairs of parallel sides

23. Pour qu'un quadrilatère soit un parallélogramme, il faut qu'il ait:

A deux côtés adjacents de longueurs égales

B deux côtés parallèles de longueurs égales

C une diagonale comme axe de symétrie

D deux angles adjacents égaux

E ses côtés parallèles deux à deux

27. Soda costs a cents for each bottle, including the deposit, but there is a refund of b cents on each empty bottle. How much will Henry have to pay for x bottles if he brings back y empties?

A $ax + by$ cents

B $ax - by$ cents

C $(a - b)x$ cents

D $(a + x) - (b + y)$ cents

E None of these

27. Une eau gazeuse coûte a cents la bouteille; on remet b cents pour chaque bouteille vide rapportée. Combien Henri devra-t-il payer s'il achète x bouteilles et s'il en rapporte y vides?

A ax + by cents

B ax - by cents

C (a - b)x cents

D (a + x) - (b + y) cents

E Aucune de ces réponses

3.4. Rephrasing the Items

The members of the team had been asked to propose replacements for improper mathematical terms or faulty sentences, and most of them did so. Except for the replacement of single words, the changes suggested by the various members of the team difffered more often than not, as expected. It was thus necessary to look at all the suggestions made for each item and select the most appropriate. In some cases the most appropriate change was a synthesis of a number of suggestions and a complete rewriting of the item in question. One member of the project prepared a new version of the tests, taking into account most of the comments made by the reviewers. The new version thus prepared was then reread by two bilingual researchers who were not part of the correcting team.
To summarize the procedure:

a. A team of six bilingual mathematics educators was selected

b. A framework for examining the tests was prepared

c. The items needing changes were identified

d. Suggestions for changes were collected

e. Items were rewritten

f. The rewritten items were again reviewed for language accuracy

3.5. Producing the Test Booklets

The 180 corrected items and their associated graphs and figures were entered into the Macintosh microcomputer for formatting and typesetting. What was thought to be a straightforward task proved complex and time consuming because the original software package could not properly format geometric figures or common fractions. After several attempts to overcome these difficulties, it was decided to switch to a software package with better graphics and fonts. The use of these new capabilities still presented a challenge, however, and it proved necessary to hire a computer specialist to complete the test booklets. Unfortunately, we were unable to find a specialist with the appropriate technical qualifications who was also well versed in written French. This made it necessary to go over the items several times in order to eliminate typos and spelling errors, and in the end eight revisions of the formatting were required to create the final version of the test booklets.

4. The Sample

The achieved sample for this study consisted of 20 grade 8 classes in 16 schools, a total of some 408 students. All the schools were francophone, with French as the language of instruction. Three of the schools were large with more than 40 students in grade 8. Eight of the schools were located in an urban setting, the remaining 12 in rural and semi-rural areas. All grade 8 students in each school participated in the study.

Each student was asked to complete two of the five test booklets. Each student answered the core form booklet 3L, and one of the four rotated forms, booklets 2LA, 2LB, 2LC or 2LD. Thus each student answered 75 of the 180 items. The booklets were administered by the classroom teacher in early May of 1987. This sample is almost twice the size of the francophone sample selected for the Second International Mathematics Study (SIMS).

5. Results for the Revised Test Items

One of the purposes of this study was to revise the French test items used in the SIMS and to compare the resultant percentages of correct responses to to those obtained by the francophone students in SIMS and to the Ontario provincial averages obtained by all students in Ontario in SIMS.

SIMS had a francophone sample of 242 students for the core form (indicated as form 0 on subsequent tables) and about 60 students for each of the rotated forms (shown as forms 1 to 4 on the tables). Our revised sample had 408 students for the core form and about 102 students for each of the rotated forms. Revisions were made to some 128 0f the 180 test items during the course of this study. Revised items are indicated by the letter Y appearing in the column headed "REV" in the tables.

Table 1 shows the percentages correct obtained by students in the SIMS all Ontario sample (SIMSO), the SIMS francophone sample (SIMSF) and by students in our revised francophone sample using the revised test items (FRANR) for the core form 0. All results reported in the tables are bases on end of school year data for all three groups.

Table headings refer to the following: SIMSO, SIMSF, FRANR are the end of year per cent correct responses for the all Ontario SIMS sample, the francophone SIMS sample and our enlarged francophone sample using the revised items, respectively. CHANGE is the difference between the FRANR and SIMSF per cent correct. DIFF is the difference between the FRANR and SIMSO per cent correct. TOPIC is the International Curriculum topic and sub-topic classification number. FORM refers to the test booklet in which the item was placed. Booklet 3L, the core form is indicated by 0. The rotated forms, booklets 2LA, 2LB, 2LC and 2LD are indicated as 1, 2, 3 and 4 respectively. Item refers to the item number within booklet. REV the letter Y in this column indicates that the French version of the item was revised during the course of our project. SAMPLE refers to the number of students in our enlarged sample (FRANR) who replied to each item. HUNO is the master item number assigned to each of the 180 items during the development stage of the SIMS. ABBREVIATED ITEM STEM presents up to the first 60 characters in the English version of the item.

The results for the 40 items in form 0 are the most stable as the sample is almost four times as large as that for the rotated forms. However considering the rather small sample size for SIMSF the error of measurement must be considered to be about 10 per cent.

Of the 10 unchanged items in form 0 two items or 20 per cent showed a change of more than 10 per cent. The 30 revised items in this form exhibited a higher rate of change. Ten of the of the 30 items or 33 per cent showed a change greater than 10 per cent. In the core form a change in per cent correct occurs about one third more often in revised items than it does in the unchanged items.

As both the SIMSF and our samples are rather small in the case of the rotated forms the error of measurement has to be considered greater than 10 per cent and is probably in the range of 15 per cent. Table 2 shows the results for the four rotated forms.

Of the 42 unrevised items 15 or 36 per cent of these items show a change greater than 15 per cent. The 98 revised items show a rather lower rate of change in that 27 items or 28 per cent of revised items had

a change greater than 15 per cent. On this basis it appears that for the rotated forms the effects of the item revisions on the per cent correct attained by students is not evident as it was in the core form.

The core form data indicate that the revisions of test items is certainly a contributing factor to the changes in per cent correct. While the rotated form data do not confirm this, it is likely that this is also the case for the rotated forms.

TABLE 1

Per cent of Ontario Grade 8 Students Answering Correctly the Items in Booklet 3L the Core Form, Form 0.
All Students Who Participated in the SIMS (SIMSO).
All Francophone Students Who Participated in the SIMS (SIMSF).
Francophone Students in the Enlarged Sample Using the Revised Test Items (FRANR).

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
61	45	37	-8	-24	101	0	16		408	12	(-2) * (-3) IS EQUAL TO
32	24	23	-1	-9	2	0	37		408	43	WHICH OF THE POINTS A, B, C, D, E ON THIS NUMBER LINE
47	29	29	0	-18	3	0	32		408	140	7 3/20 IS EQUAL TO
65	45	48	3	-17	4	0	2		408	189	1/5 IS EQUAL TO
51	29	33	4	-18	4	0	38		408	46	20% OF 125 IS EQUAL TO
12	9	15	6	3	106	0	3		408	151	IF 5X + 4 = 4X - 31, THEN X IS EQUAL TO
65	49	56	7	-9	3	0	26		408	5	0.40 * 6.38 IS EQUAL TO
53	40	48	8	-5	106	0	18		408	86	IF 4X/12 = 0, THEN X IS EQUAL TO
64	39	55	16	-9	2	0	31		408	3	2/5 + 3/8 IS EQUAL TO
45	27	48	21	3	401	0	1		408	100	2 METERS + 3 MILLIMETERS IS EQUAL TO
48	40	37	-3	-11	204	0	40	Y	408	156	TRIANGLES PQR AND STU ARE SIMILAR. HOW LONG IS SU?
16	4	4	0	-12	404	0	10	Y	408	168	A SOLID PLASTIC CUBE WITH EDGES 1 CM LONG WEIGHS 1 GRAM.
74	60	61	1	-13	106	0	13	Y	408	17	IF P = LW AND IF P = 12 AND L = 3, THEN W IS EQUAL TO
43	31	32	1	-11	202	0	19	Y	408	23	THE LENGTH OF THE CIRCUMFERENCE OF THE CIRCLE WITH CENTER AT
58	36	40	4	-18	4	0	12	Y	408	79	A PAINTER IS TO MIX GREEN AND YELLOW PAINT IN THE RATIO OF
63	39	43	4	-20	4	0	33	Y	408	8	IN A SCHOOL OF 800 PUPILS, 300 ARE BOYS. THE RATIO OF THE
58	40	45	5	-13	2	0	28	Y	408	75	IN THE FIGURE THE LITTLE SQUARES ARE ALL THE SAME SIZE AND
93	88	93	5	0	402	0	8	Y	408	69	THE LENGTH OF AB IS 1 UNIT. WHICH IS THE BEST ESTIMATE FOR
68	50	56	6	-12	4	0	14	Y	408	181	A MODEL BOAT IS BUILD TO SCALE SO THAT IT IS 1/10 AS LONG AS
76	64	70	6	-6	201	0	17	Y	408	121	WHICH OF THE INDICATED ANGLES IS ACUTE?
62	24	30	6	-32	404	0	23	Y	408	103	A SQUARE IS REMOVED FROM THE RECTANGLE AS SHOWN. WHAT IS THE
49	36	43	7	-6	101	0	25	Y	408	13	THE AIR TEMPERATURE AT THE FOOT OF A MOUNTAN IS 31 DEGREES.
39	23	30	7	-9	107	0	30	Y	408	19	THE TABLE BELOW COMPARES THE HEIGHT FROM WHICH A BALL IS
67	54	61	7	-6	402	0	6	Y	408	167	THE AREA OF THE SHADED FIGURE, TO THE NEAREST SQUARE UNIT, I
32	17	25	8	-7	2	0	4	Y	408	76	FOUR 1-LITER BOWLS OF ICE CREAM WERE SET OUT AT A PARTY.
53	38	46	8	-7	4	0	24	Y	408	190	CLOTH IS SOLD BY THE SQUARE METER. IF 6 SQUARE METERS OF
90	86	94	8	4	401	0	29	Y	408	68	THE DISTANCE BETWEEN TWO TOWNS IS USUALLY MEASURED IN
51	36	44	8	-7	402	0	9	Y	408	38	ON THE ABOVE SCALE THE READING INDICATED BY THE ARROW IS
84	69	78	9	-6	3	0	20	Y	408	109	IN A DISCUS-THROWING COMPETITION, THE WINNING THROW WAS 61.6
42	13	22	9	-20	4	0	34	Y	408	179	WHAT IS 20 AS A PERCENT OF 80?
72	67	77	10	5	202	0	22	Y	408	122	(TRIANGLE WITH 2 ANGLES GIVEN) X IS EQUAL TO
62	33	45	12	-17	4	0	36	Y	408	9	30 IS 75% OF WHAT NUMBER?
37	20	34	14	-3	3	0	15	Y	408	45	THE VALUE OF 0.2131 * 0.02958 IS APPROXIMATELY
37	15	30	15	-7	207	0	11	Y	408	175	ON A NUMBER LINE TWO POINTS A AND B ARE GIVEN. THE COORDINAT
42	30	45	15	3	208	0	21	Y	408	127	IN THE ABOVE DIAGRAM, TRIANGLES ABC AND DEF ARE CONGRUENT,
61	42	58	16	-3	106	0	35	Y	408	196	THE SENTENCE 'A NUMBER X DECREASED BY 6 IS LESS THAN 12' CAN
57	24	40	16	-17	403	0	5	Y	408	165	WHICH OF THE FOLLOWING IS THE CLOSEST APPROX. TO THE AREA OF
58	39	57	18	-1	104	0	27	Y	408	149	A SHOPKEEPER HAS X KG OF TEA IN STOCK. HE SELLS 15 KG AND
48	29	50	21	2	207	0	39	Y	408	28	WHAT ARE THE COORDINATES OF POINT P?
68	42	66	24	-2	212	0	7	Y	408	31	THE DIAGRAM SHOWS A CARDBOARD CUBE WHICH HAS BEEN CUT ALONG
55	38	46	8	-9	AVERAGES FOR THE CORE FORM						

TABLE 2

Per cent of Ontario Grade 8 Students Answering Correctly the Items in Booklets 2LA, 2LB, 2LC, and 2LD.
The Rotated Forms 1, 2, 3, and 4.
All Students Who Participated in the SIMS (SIMSO).
All Francophone Students Who Participated in the SIMS (SIMSF).
Francophone Students in the Enlarged Sample Using the Revised Test Items (FRANR).

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
55	54	37	-17	-18	4	2	1		104	178	72% IS EQUAL TO
48	53	43	-10	-5	204	2	32		104	197	THE PICTURE ABOVE SHOWS HOW PEDRO USED A SHORT TREE TO FIND
52	47	42	-5	-10	302	2	3		104	131	THE PETALS ON 100 FLOWERS OF DIFFERENT KINDS WERE CAREFULLY
62	59	55	-4	-7	5	2	20		104	80	WHICH OF THESE NUMBERS IS A PRIME NUMBER?
25	34	30	-4	5	204	3	9		104	125	IF TWO TRIANGLES ARE SIMILAR, WHICH OF THE FOLLOWING
27	16	14	-2	-13	105	3	35		104	88	A/15 - B/5 IS EQUAL TO
63	40	40	0	-23	3	1	21		106	108	.004)24.56 IN THE DIVISION ABOVE, THE CORRECT ANSWER IS
49	na	41		-8	8	1	30		106	11	WHAT IS THE SQUARE ROOT OF 12 * 75?
51	na	41		-10	8	2	33		104	145	THE SQUARE ROOT OF 75 IS BETWEEN
38	33	33	0	-5	104	3	16		104	116	IF X = Y = Z = 1, THEN (X - Z) / (X + Y) IS EQUAL TO
53	33	35	2	-18	6	3	21		104	112	3.23 * 10**5 IS EQUAL TO
31	21	23	2	-8	404	3	31		104	40	THERE IS A BRASS PLATE OF THE SHAPE AND DIMENSIONS SHOWN IN
45	29	32	3	-13	101	2	30		104	113	(-6) - (-8) IS EQUAL TO
38	23	26	3	-12	103	1	33		106	84	0.00046 IS EQUAL TO
47	38	41	3	-6	401	4	23		102	133	HOW MANY PIECES OF PIPE EACH 20 METERS LONG WOULD BE REQUIRE
60	55	59	4	-1	2	4	25		102	186	1/2 * 1/4 IS EQUAL TO
67	51	55	4	-12	4	3	18		104	47	IF THE RATIO OF 2 TO 5 EQUALS THE RATIO OF N TO 100, THEN N
33	15	22	7	-11	208	2	13		104	62	IN THE ABOVE RECTANGLE THE MEASURE OF ANGLES ROQ IS
55	36	44	8	-11	2	2	35		104	44	THERE ARE 35 STUDENTS IN A CLASS. 1/5 OF THEM COME TO SCHOOL
67	53	61	8	-6	6	1	24		106	48	IF 10**2 * 10**3 = 10**N THEN N IS EQUAL TO
32	23	31	8	-1	104	3	24		104	148	WHICH OF THE FOLLOWING IS FALSE WHEN A, B, AND C ARE
50	44	52	8	2	303	2	19		104	161	HOW MUCH LONGER DOES IT TAKE FOR CAR B TO GO 50 KILOMETERS
66	49	59	10	-7	101	4	31		102	49	-5(6 - 4) IS EQUAL TO
60	43	53	10	-7	404	3	17		104	104	MICHAEL HAS A LARGE NUMER OF WOODED BLOCKS WHICH ARE CUBICAL
72	57	68	11	-4	203	4	16		102	91	ONE OF THE FOLLOWING FIGURES IS CONGRUENT WITH THE FIGURE
33	11	23	12	-10	207	4	4		102	126	THE STRAIGHT LINE JOINING THE POINTS (2,3) AND (2,7) CUTS
46	31	44	13	-2	104	3	12		104	52	THE COST OF PRINTING GREETING CARDS CONSISTS OF A FIXED
39	28	41	13	2	106	4	26		102	118	(X/2) < 7 IS EQUIVALENT TO
45	16	30	14	-15	104	1	26		106	115	IF X = -3, THE VAUE OF -3X IS
88	75	90	15	2	1	4	13		102	41	1054 - 865
52	31	46	15	-6	3	3	22		104	141	THE SPEED OF SOUND IS APPROXIMATELY 340 METERS PER SECOND.
23	11	27	16	4	3	4	3		102	78	A RUNNER RAN 3,000 METERS IN EXACTLY 8 MINUTES. WHAT WAS
51	23	41	18	-10	5	4	28		102	111	WHICH OF THE FOLLOWING EQUALS 7 * (3 + 9)?
47	34	52	18	5	206	2	26		104	193	(TRAPEZOID WITH DIMENSIONS) X IS EQUAL TO
84	77	96	19	12	1	3	28		104	73	162 * 45 IS EQUAL TO
71	60	80	20	9	202	4	19		102	155	IF AB IS A STRAIGHT LINE, WHAT IS THE MEASURE IN DEGREES OF
73	59	80	21	7	1	2	34		104	1	(22 * 18) - (47 + 59) IS EQUAL TO
51	34	55	21	4	104	2	29		104	85	IF Y DOLLARS ARE SHARED EQUALLY AMONG FOUR BOYS, HOW MANY
52	26	47	21	-5	106	3	13		104	117	'SIX TIMES A CERTAIN NUMBER (CALL IT Q) EQUALS THE SUM OF
65	35	58	23	-7	2	1	13		106	187	3/8 - 1/5 IS EQUAL TO
57	33	59	26	2	2	3	5		104	107	1 2/5 - 1/2 IS EQUAL TO
64	32	60	28	-4	2	2	10		104	139	(3/5)/(2/7) IS EQUAL TO
64	68	51	-17	-13	202	2	6	Y	104	90	THE LINE M IS A LINE OF SYMMETRY FOR FIGURE ABCDE. THE

TABLE 2 continued

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
17	24	8	-16	-9	215	2	11	Y	104	173	U AND V ARE TWO VECTORS. WHICH FIGURE BELOW REPRESENTS U - V
30	33	20	-13	-10	203	1	6	Y	106	25	THE TRIANGLES SHOWN ABOVE ARE CONGRUENT. THE MEASURES OF
18	22	10	-12	-8	104	2	24	Y	104	15	SIMPLIFY: 5X + 3Y + 2X - 4Y
16	12	3	-9	-13	4	1	23	Y	106	191	THE PRICE OF AN ARTICLE WAS $100. THE PRICE WAS FIRST
47	33	24	-9	-23	4	1	25	Y	106	192	A CAR TAKES 15 MINUTES TO TRAVEL 10 KILOMETERS. WHAT IS THE
57	31	23	-8	-34	101	4	5	Y	102	82	THE SET OF INTEGERS LESS THAN 5 IS REPRESENTED ON ONE OF THE
65	47	40	-7	-25	105	1	28	Y	106	53	WHEN X = 2, (7X + 4) / (5X - 4) IS EQUAL TO
23	23	17	-6	-6	106	1	4	Y	106	87	THE DAVIS FAMILY TOOK A CAR TRIP FROM ANABRU THROUGH BERGEN
40	31	26	-5	-14	106	2	12	Y	104	18	THE ERROR IN THE ABOVE REASONING, IF ONE EXISTS, FIRST
23	20	16	-4	-7	107	2	5	Y	104	55	FOR THE TABLE SHOWN, A FORMULA THAT COULD RELATE M AND N IS
66	45	41	-4	-25	404	4	2	Y	102	39	WHAT IS THE VOLUME OF A RECTANGULAR BOX WITH INTERIOR
29	29	26	-3	-3	202	4	24	Y	102	123	IN A QUADRILATERAL, TWO OF THE ANGLES EACH HAVE MEASURE OF
21	16	13	-3	-8	207	1	34	Y	106	29	ONE OF THE FOLLOWING POINTS CAN BE JOINED TO THE POINT (-3,4
40	28	26	-2	-14	1	1	17	Y	106	74	(TRIANGULAR ARRAY OF 1'S) WHAT IS THE SUM OF THE 50TH ROW?
68	67	65	-2	-3	209	3	32	Y	104	158	TRIANGLE PQT CAN BE ROTATED (TURNED) ONTO TRIANGLE SQR. THE
15	15	14	-1	-1	1	4	6	Y	102	105	WHICH OF THE FOLLOWING IS (ARE) TRUE?
66	51	50	-1	-16	6	2	16	Y	104	10	THE VALUE OF 2**3 * 3**2 IS
26	14	13	-1	-13	104	4	27	Y	102	16	SODA COSTS A CENTS FOR EACH BOTTLE, BUT THERE IS A REFUND
20	19	18	-1	-2	303	2	4	Y	104	129	THERE ARE 7,000,000 GIRLS UNDER THE AGE OF 21 IS A COUNTRY
43	32	31	-1	-12	402	2	17	Y	104	102	THE MEASURE OF THE ANGLE SHOWN IS NEAREST TO
35	24	23	-1	-12	404	2	28	Y	104	37	THE TOTAL AREA OF THE TWO TRIANGLES IS
31	na	26		-5	8	3	33	Y	104	81	SINCE 4 * 9 = 36, THE SQUARE ROOT OF 36 IS EQUAL TO
64	na	43		-21	9	4	10	Y	102	146	FIND THE SUM: 3 WEEKS 5 DAYS + 9 WEEKS 6 DAYS
22	na	25		3	110	4	17	Y	102	120	THE SYMBOL P INTERSECT Q REPRESENTS THE INTERSECTION OF SETS
45	27	27	0	-18	209	2	14	Y	104	96	TRIANGLE ABC AND TRIANGLE A'B'C' ARE CONGRUENT AND THEIR
75	na	73		-2	301	3	7	Y	104	65	YOU WISH TO KNOW ABOUT THE POPULARITY OF THE SOFT-DRINK SLOS
52	40	40	0	-12	402	4	7	Y	102	134	EACH OF THE SMALL SQUARES IN THE FIGURE IS 1 SQUARE UNIT.
36	22	22	0	-14	404	2	18	Y	104	71	THE RECTANGLE SHOWN ABOVE IS CUT ALONG THE DOTTED LINES, AND
52	39	40	1	-12	4	3	14	Y	104	177	CANDIDATE A RECEIVED 70 PERCENT OF THE VOTES CAST IN AN
81	75	76	1	-5	304	1	11	Y	106	132	A TEAM SCORES AN AVERAGE OF 3 POINTS PER GAME OVER 5 GAMES.
21	15	16	1	-5	404	3	20	Y	104	166	WHAT IS THE SURFACE AREA OF THIS SOLID RECTANGULAR BOX?
47	38	40	2	-7	1	4	12	Y	102	2	MATCHSTICKS ARE ARRANGED AS FOLLOWS. IF THE PATTERN IS
22	8	10	2	-12	206	2	25	Y	104	93	WHICH OF THESE IS A CORRECT STATEMENT FOR THIS TRIANGLE?
32	26	28	2	-4	404	1	29	Y	106	194	WHAT IS THE AREA OF TRIANGLE PQR?
42	27	30	3	-12	3	2	7	Y	104	6	ALEXANDRA WALKED FROM RIVERVIEW TO BRIDGEPORT, WHICH ARE
51	32	35	3	-16	204	4	15	Y	102	26	ON LEVEL GROUND, A BOY 5 UNITS TALL CASTS A SHADOW 3 UNITS
32	26	29	3	-3	206	3	1	Y	104	27	(RIGHT TRIANGLE WITH 2 SIDES GIVE) WHAT IS THE VALUE OF S?
43	40	43	3	0	302	1	12	Y	106	97	A TABLE SHOWS SCORES FOR A CLASS ON A 10-POINT TEST. HOW MAN
53	39	42	3	-11	303	1	19	Y	106	66	THE GRAPH SHOWS THE DISTANCE TRAVELED BY A TRACTOR DURING A
21	23	26	3	5	404	3	15	Y	104	136	WHAT IS THE CAPACITY OF A CUBIC CONTAINER 10 CM BY 10 CM BY
51	43	47	4	-4	303	3	10	Y	104	160	THREE HOURS AFTER STARTING, CAR A IS HOW MANY KM AHEAD OF CA
31	23	28	5	-3	209	4	29	Y	102	63	PQRS IS A RECTANGLE. ITS IMAGE AFTER A TRANSFORMATION IS
77	65	71	6	-6	1	1	1	Y	106	42	WHICH OF THE FOLLOWING IS EQUAL TO A QUARTER OF A MILLION?
41	20	26	6	-15	3	2	27	Y	104	184	THE LARGE SQUARE HAS AREA 1 SQUARE UNIT. THE AREA OF THE
52	26	32	6	-20	4	4	14	Y	102	110	IN A SCHOOL ELECTION WITH THREE CANDIDATES, JOE RECEIVED 120
21	14	20	6	-1	103	2	22	Y	104	172	FIND THE VALUE OF N. N = 10**3 + 10**1 + 10**0 + 10**(-2)
22	22	28	6	6	215	4	18	Y	102	170	GIVEN VECTOR V AND VECTOR W AS SHOWN IN THE FIGURE ABOVE,
58	39	46	7	-12	1	2	15	Y	104	137	WHICH OF THE FOLLOWING OPERATIONS WITH WHOLE NUMBERS WILL
66	43	50	7	-16	3	4	33	Y	102	7	(847.36) IN THE NUMBER IN THE BOX, THE DIGIT 6 REPRESENTS
51	26	34	8	-17	104	1	5	Y	106	195	A NUMBER X IS MULTIPLIED BY ITSELF AND THE RESULT IS ADDED T

TABLE 2 continued

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
40	23	31	8	-9	201	3	23	Y	104	21	A QUADRILATERAL MUST BE A PARALLELOGRAM IF IT HAS
33	26	34	8	1	202	1	10	Y	106	58	LINES AB AND CD ARE PARALLEL. TWO ANGLES WHOSE MEASURES
31	16	24	8	-7	207	3	11	Y	104	169	SUPPOSE YOU START AT POINT M(-1,-1), MOVE A DISTANCE OF ONE
45	18	26	8	-19	304	4	35	Y	102	130	THE WEIGHT GAIN FROM 6 TO 10 MONTHS WAS
68	48	56	8	-12	402	4	30	Y	102	164	ACCORDING TO THE SCALE SHOWN, THE LENGTH OF SIDE BC OF A
20	16	25	9	5	205	1	14	Y	106	176	AMONG THE FOLLOWING LINES D1, D2, D3, D4, D5, WHICH HAS NO
63	53	62	9	-1	212	1	15	Y	106	159	THE FIGURE ABOVE SHOWS A WOODEN CUBE WITH ONE CORNER CUT OFF
68	49	59	10	-9	2	1	3	Y	106	185	WHICH IS THE CLOSEST ESTIMATE FOR THE ANSWER TO 5 3/7 + 6 5/
18	17	27	10	9	202	2	8	Y	104	59	THREE STRAIGHT LINES INTERSECT AS SHOWN IN THE DIAGRAM.
62	34	45	11	-17	3	3	25	Y	104	183	74.236 ROUNDED TO THE NEAREST HUNDREDTH IS
19	16	27	11	8	4	1	16	Y	106	142	THE TABLE ABOVE SHOWS THE VALUES OF X AND Y, WHERE X IS
25	12	23	11	-2	4	4	32	Y	102	180	$150 IS DIVIDED IN THE RATIO OF 2 TO 3. THE SMALLER OF THE
72	60	71	11	-1	302	4	34	Y	102	32	HERE IS A TABLE THAT SHOWS THE NUMBER OF TREES PLANTED ALONG
47	18	29	11	-18	403	1	9	Y	106	72	THE FIGURE ABOVE SHOWS A RECTANGULAR BOX. WHICH OF THE
63	34	45	11	-18	403	2	31	Y	104	135	THE LENGTH OF A BOX WAS MEASURED AND FOUND TO BE 9 CM TO THE
57	47	59	12	2	4	2	23	Y	104	143	IF THERE ARE 300 CALORIES IN 100 GRAMS OF A CERTAIN FOOD,
81	72	84	12	3	303	4	21	Y	102	34	WHICH OF THESE IS A TRUE STATEMENT ABOUT THE INFORMATION
78	73	85	12	7	304	2	9	Y	104	67	JOE HAD THREE TEST SCORES OF 78, 76 AND 74, WHILE MARY HAD
67	40	53	13	-14	106	4	20	Y	102	54	WHICH EQUATION IS TRUE FOR ALL VALUES OF N?
84	67	80	13	-4	303	1	22	Y	106	33	THE CIRCLE GRAPH SHOWS THE PROPORTION OF VARIOUS GRAIN CROPS
59	35	48	13	-11	304	4	11	Y	102	162	THE GRAPH SHOWS THE TIME OF TRAVEL BY PUPILS FROM HOME TO
65	46	59	13	-6	404	4	9	Y	102	199	THE AREA OF THE SHADED CIRCLE IS WHAT PART OF THE AREA OF TH
51	26	41	15	-10	201	1	31	Y	106	57	THE FIGURE QRST IS A SQUARE AND PQT AN EQUILATERAL TRIANGLE.
82	70	85	15	3	401	1	7	Y	106	101	A 15 CENTIMETER PIECE IS CUT FROM A RIBBON 1 METER LONG. WHA
58	35	51	16	-7	1	1	32	Y	106	106	PETER AND PAUL DECIDED TO START SAVING MONEY. PETER CAN SAVE
65	49	65	16	0	3	1	18	Y	106	77	THE POSITION ON THE SCALE INDICATED BY THE ARROW IS
66	56	72	16	6	107	3	26	Y	104	152	A BOWLING BALL TRAVELS 4 METERS PER SECOND. THE DISTANCE IN
35	23	39	16	4	202	3	34	Y	104	128	IF, IN THE GIVEN FIGURE, PQ AND RS ARE INTERSECTING STRAIGHT
50	29	45	16	-5	215	4	22	Y	102	174	A HALF-TURN ABOUT O IS APLIED TO THE FIGURE ABOVE. WHICH OF
49	25	42	17	-7	304	3	27	Y	104	99	IN THE GRAPH, RAINFALL IN CENTIMETERS IS PLOTTED FOR 13 WEEK
39	36	54	18	15	5	3	19	Y	104	144	ONE BELL RIGHTS EVERY 8 MINUTES, A SECOND BELL RINGS EVERY 1
46	43	61	18	15	212	3	4	Y	104	198	WHICH OF THE FOLLOWING PATTERNS CAN BE FOLDED ALONG THE
62	46	64	18	2	401	3	2	Y	104	36	WHICH OF THE FOLLOWING IS ... TO THE WEIGHT OF A NORMAL MAN?
47	29	48	19	1	2	4	1	Y	102	188	THE PICTURE SHOWS SOME BLACK AND SOME WHITE MARBLES. OF ALL
65	51	70	19	5	201	2	21	Y	104	89	AB // DC AND AD // BC. QUADRILATERAL ABCD IS A
41	26	45	19	4	306	3	6	Y	104	163	THERE ARE FIVE BLACK BUTTONS AND ONE RED BUTTON IN A JAR. IF
85	61	81	20	-4	2	3	3	Y	104	4	WHICH OF THE FOLLOWING IS A PAIR OF EQUIVALENT FRACTIONS?
19	4	24	20	5	215	1	8	Y	106	171	IF D IS THE DIRECTION OF PROJECTION AND A IS THE AXIS OF
38	9	29	20	-9	404	1	20	Y	106	70	WHAT IS THE AREA OF THE ABOVE PARALLELOGRAM?
74	49	70	21	-4	1	3	8	Y	104	138	A GROUP OF CHILDREN WAS DIVIDED INTO 7 TEAMS WITH NINE IN
67	51	73	22	6	303	4	8	Y	102	98	HERE IS A TABLE OF DATA AND A GRAPH OF THE SAME DATA. WHAT I
47	26	50	24	3	304	3	30	Y	104	35	THE ARITHMETIC MEAN (AVERAGE) OF: 1.50, 2.40, 3.75 IS EQUAL
61	56	81	25	20	202	1	27	Y	106	22	AB, CD, AD EF ARE INTERSECTING STRAIGHT LINES AS SHOWN
46	14	40	26	-6	102	1	35	Y	106	14	WHICH OF THE FOLLOWING SEQUENCES OF NUMBERS IS IN THE ORDER
38	17	47	30	9	3	2	2	Y	104	182	WHICH OF THE FOLLOWING IS THIRTY-SEVEN THOUSANDTHS?
44	26	60	34	16	203	3	29	Y	104	24	IF SEGMENT PQ WERE DRAWN FOR EACH FIGURE SHOWN BELOW, IT
76	25	70	45	-6	209	1	2	Y	106	30	IN WHICH DIAGRAM BELOW IS THE SECOND FIGURE THE IMAGE OF THE
49	34	43	8	-6	AVERAGES FOR THE FOUR ROTATED FORMS						

6. Results Student Achievement

This section presents and compares the results of three sets of student achievement data. The 180 test items are grouped according to the international classification of curriculum topics. The results are presented in the form of the percentage of students who responded correctly to each item. Results are shown for the all Ontario SIMS sample (SIMSO), the francophone SIMS sample (SIMSF) and our revises sample (FRANR). Table headings are as described above.

These results should be interpreted with a degree of caution, particularly in the case of rotated form items, as the error of measurement can be 10 per cent or higher.

Following is a detailed discussion of the results presented in the tables at the end of each section. Reference to table items is made by form and item numbers (e.g., 4.22 refers to form 4, item 22; 0.7 refers to the core form, item 7). The items are grouped according to their international classification into five broad topics; Arithmetic, Algebra, Geometry, Probability and Statistics, and Measurement. Each of these broad topics is further sub-divided into a number of sub-topics. Table 3 is arranged in order of international topic and sub-topic. The last line in each sub-section of the table presents the averages for the sub-topic.

000 ARITHMETIC

001 Whole Numbers

All the items in this category were on the rotated forms and thus the FRANR results are based on a sample of about 102 students. On average the results obtained by our enlarged sample of students on the revised test items (FRANR) were better by some 10 per cent than the SIMSF results and close to the SIMSO average of 61 per cent.

002 Common Fractions

More than 50 per cent of the FRANR students answered seven of the 12 items in this group correctly. This was much better than the SIMSF results and close to the SIMSO level of achievement.

003 Decimal Fractions

About 78 per cent of FRANR students gave the correct answer to item 0.26. Three items 0.26 1.18 and 4.33 were answered correctly by 50 to 65 per cent of FRANR students. THe remaining nine items were answered correctly by 26 to 47 per cent of our students. Item 2.2 which was noted to be confusing in SIMSF had much better results this time with 47 per cent answering correctly. Item 2.27 which was badly worded in the SIMSF administration also improved from 20 to 26 per cent correct. For this sub-topic the overall results were some 10 per cent better than the SIMSF results but still not as high as the SIMSO average.

004 Ratio, Proportion and Percent

The percentage of correct answers for these items set in a variety of contexts, ranged from 3 to 59 per cent. It seems that most students were not able to solve the word problems or perform the operations correctly. Item 2.1 which students in the SIMSF sample found the easiest, was found to be much more difficult by our sample, this item was not revised in the course of our study. Items 3.14 and 4.14 which were deemed to be unclear in the SIMSF did not fare much better after revision. Student performance was about the same on item 3.14 while 4.14 improved by about 6 per cent. Student performance overall was slightly better than on SIMSF but not up to SIMSO.

005 Number Theory

Student performance was considerably improved over SIMSF, by some 10 per cent. Performance of the FRANR students was equal to the SIMSO average of about 50 per cent correct.

006 Powers

The FRANR students did only slightly better than the SIMSF sample in this category. Results were about 12 per cent lower than the SIMSO average.

008 Square Roots

There is no comparative data for the SIMSF sample on the three items in this sub-topic. The FRANR students averaged 36 per cent correct compared to the provincial average of 44 per cent correct.

009 Dimensional Analysis

Again there is no comparative data avaliable for SIMSF on the single item in this sub-topic. FRANR students with 43 per cent correct were much worse than the SIMSO average of 64 per cent correct.

TABLE 3

Per cent of Ontario Grade 8 Students Answering Correctly All the Items in the SIMS Arranged by International Curriculum Topic and Sub-Topic.
All Students Who Participated in the SIMS (SIMSO).
All Francophone Students Who Participated in the SIMS (SIMSF).
Francophone Students in the Enlarged Sample Using the Revised Test Items (FRANR).

000 ARITHMETIC

001 Whole Numbers

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
77	65	71	6	-6	1	1	1	Y	106	42	WHICH OF THE FOLLOWING IS EQUAL TO A QUARTER OF A MILLION?
40	28	26	-2	-14	1	1	17	Y	106	74	(TRIANGULAR ARRAY OF 1'S) WHAT IS THE SUM OF THE 50TH ROW?
58	35	51	16	-7	1	1	32	Y	106	106	PETER AND PAUL DECIDED TO START SAVING MONEY. PETER CAN SAVE
58	39	46	7	-12	1	2	15	Y	104	137	WHICH OF THE FOLLOWING OPERATIONS WITH WHOLE NUMBERS WILL
73	59	80	21	7	1	2	34		104	1	(22 * 18) - (47 + 59) IS EQUAL TO
74	49	70	21	-4	1	3	8	Y	104	138	A GROUP OF CHILDREN WAS DIVIDED INTO 7 TEAMS WITH NINE IN
84	77	96	19	12	1	3	28		104	73	162 * 45 IS EQUAL TO
15	15	14	-1	-1	1	4	6	Y	102	105	WHICH OF THE FOLLOWING IS (ARE) TRUE?
47	38	40	2	-7	1	4	12	Y	102	2	MATCHSTICKS ARE ARRANGED AS FOLLOWS. IF THE PATTERN IS
88	75	90	15	2	1	4	13		102	41	1054 - 865
61	48	58	10	-3	AVERAGES WHOLE NUMBERS						

002 Common Fractions

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
32	17	25	8	-7	2	0	4	Y	408	76	FOUR 1-LITER BOWLS OF ICE CREAM WERE SET OUT AT A PARTY.
58	40	45	5	-13	2	0	28	Y	408	75	IN THE FIGURE THE LITTLE SQUARES ARE ALL THE SAME SIZE AND
64	39	55	16	-9	2	0	31		408	3	2/5 + 3/8 IS EQUAL TO
32	24	23	-1	-9	2	0	37		408	43	WHICH OF THE POINTS A, B, C, D, E ON THIS NUMBER LINE
68	49	59	10	-9	2	1	3	Y	106	185	WHICH IS THE CLOSEST ESTIMATE FOR THE ANSWER TO 5 3/7 + 6 5/
65	35	58	23	-7	2	1	13		106	187	3/8 - 1/5 IS EQUAL TO
64	32	60	28	-4	2	2	10		104	139	(3/5)/(2/7) IS EQUAL TO
55	36	44	8	-11	2	2	35		104	44	THERE ARE 35 STUDENTS IN A CLASS. 1/5 OF THEM COME TO SCHOOL
85	61	81	20	-4	2	3	3	Y	104	4	WHICH OF THE FOLLOWING IS A PAIR OF EQUIVALENT FRACTIONS?
57	33	59	26	2	2	3	5		104	107	1 2/5 - 1/2 IS EQUAL TO
47	29	48	19	1	2	4	1	Y	102	188	THE PICTURE SHOWS SOME BLACK AND SOME WHITE MARBLES. OF ALL
60	55	59	4	-1	2	4	25		102	186	1/2 * 1/4 IS EQUAL TO
57	38	51	14	-6	AVERAGES COMMON FRACTIONS						

003 Decimal Fractions

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
37	20	34	14	-3	3	0	15	Y	408	45	THE VALUE OF 0.2131 * 0.02958 IS APPROXIMATELY
84	69	78	9	-6	3	0	20	Y	408	109	IN A DISCUS-THROWING COMPETITION, THE WINNING THROW WAS 61.6
65	49	56	7	-9	3	0	26		408	5	0.40 * 6.38 IS EQUAL TO
47	29	29	0	-18	3	0	32		408	140	7 3/20 IS EQUAL TO
65	49	65	16	0	3	1	18	Y	106	77	THE POSITION ON THE SCALE INDICATED BY THE ARROW IS
63	40	40	0	-23	3	1	21		106	108	.004)24.56 IN THE DIVISION ABOVE, THE CORRECT ANSWER IS
38	17	47	30	9	3	2	2	Y	104	182	WHICH OF THE FOLLOWING IS THIRTY-SEVEN THOUSANDTHS?
42	27	30	3	-12	3	2	7	Y	104	6	ALEXANDRA WALKED FROM RIVERVIEW TO BRIDGEPORT, WHICH ARE
41	20	26	6	-15	3	2	27	Y	104	184	THE LARGE SQUARE HAS AREA 1 SQUARE UNIT. THE AREA OF THE
52	31	46	15	-6	3	3	22		104	141	THE SPEED OF SOUND IS APPROXIMATELY 340 METERS PER SECOND.
62	34	45	11	-17	3	3	25	Y	104	183	74.236 ROUNDED TO THE NEAREST HUNDREDTH IS
23	11	27	16	4	3	4	3		102	78	A RUNNER RAN 3,000 METERS IN EXACTLY 8 MINUTES. WHAT WAS
66	43	50	7	-16	3	4	33	Y	102	7	(847.36) IN THE NUMBER IN THE BOX, THE DIGIT 6 REPRESENTS
53	34	44	10	-9	AVERAGES DECIMAL FRACTIONS						

TABLE 3 continued

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
004 Ratio, Proportion and Percent											
65	45	48	3	-17	4	0	2		408	189	1/5 IS EQUAL TO
58	36	40	4	-18	4	0	12	Y	408	79	A PAINTER IS TO MIX GREEN AND YELLOW PAINT IN THE RATIO OF
68	50	56	6	-12	4	0	14	Y	408	181	A MODEL BOAT IS BUILD TO SCALE SO THAT IT IS 1/10 AS LONG AS
53	38	46	8	-7	4	0	24	Y	408	190	CLOTH IS SOLD BY THE SQUARE METER. IF 6 SQUARE METERS OF
63	39	43	4	-20	4	0	33	Y	408	8	IN A SCHOOL OF 800 PUPILS, 300 ARE BOYS. THE RATIO OF THE
42	13	22	9	-20	4	0	34	Y	408	179	WHAT IS 20 AS A PERCENT OF 80?
62	33	45	12	-17	4	0	36	Y	408	9	30 IS 75% OF WHAT NUMBER?
51	29	33	4	-18	4	0	38		408	46	20% OF 125 IS EQUAL TO
19	16	27	11	8	4	1	16	Y	106	142	THE TABLE ABOVE SHOWS THE VALUES OF X AND Y, WHERE X IS
16	12	3	-9	-13	4	1	23	Y	106	191	THE PRICE OF AN ARTICLE WAS $100. THE PRICE WAS FIRST
47	33	24	-9	-23	4	1	25	Y	106	192	A CAR TAKES 15 MINUTES TO TRAVEL 10 KILOMETERS. WHAT IS THE
55	54	37	-17	-18	4	2	1		104	178	72% IS EQUAL TO
57	47	59	12	2	4	2	23	Y	104	143	IF THERE ARE 300 CALORIES IN 100 GRAMS OF A CERTAIN FOOD,
52	39	40	1	-12	4	3	14	Y	104	177	CANDIDATE A RECEIVED 70 PERCENT OF THE VOTES CAST IN AN
67	51	55	4	-12	4	3	18		104	47	IF THE RATIO OF 2 TO 5 EQUALS THE RATIO OF N TO 100, THEN N
52	26	32	6	-20	4	4	14	Y	102	110	IN A SCHOOL ELECTION WITH THREE CANDIDATES, JOE RECEIVED 120
25	12	23	11	-2	4	4	32	Y	102	180	$150 IS DIVIDED IN THE RATIO OF 2 TO 3. THE SMALLER OF THE
50	34	37	4	-13	AVERAGES RATIO, PROPORTION AND PERCENT						
005 Number Theory											
62	59	55	-4	-7	5	2	20		104	80	WHICH OF THESE NUMBERS IS A PRIME NUMBER?
39	36	54	18	15	5	3	19	Y	104	144	ONE BELL RIGHTS EVERY 8 MINUTES, A SECOND BELL RINGS EVERY 1
51	23	41	18	-10	5	4	28		102	111	WHICH OF THE FOLLOWING EQUALS 7 * (3 + 9)?
51	39	50	11	-1	AVERAGES NUMBER THEORY						
006 Powers											
67	53	61	8	-6	6	1	24		106	48	IF 10**2 * 10**3 = 10**N THEN N IS EQUAL TO
66	51	50	-1	-16	6	2	16	Y	104	10	THE VALUE OF 2**3 * 3**2 IS
53	33	35	2	-18	6	3	21		104	112	3.23 * 10**5 IS EQUAL TO
62	46	49	3	-13	AVERAGES POWERS						
008 Square Roots											
49		41		-8	8	1	30		106	11	WHAT IS THE SQUARE ROOT OF 12 * 75?
51		41		-10	8	2	33		104	145	THE SQUARE ROOT OF 75 IS BETWEEN
31		26		-5	8	3	33	Y	104	81	SINCE 4 * 9 = 36, THE SQUARE ROOT OF 36 IS EQUAL TO
44	0	36	0	-8	AVERAGES SQUARE ROOTS						
009 Dimensional Analysis											
64		43		-21	9	4	10	Y	102	146	FIND THE SUM: 3 WEEKS 5 DAYS + 9 WEEKS 6 DAYS
64	0	43	0	-21	AVERAGES DIMENSIONAL ANALYSIS						

100 ALGEBRA

101 Integers

Results of the FRANR students are comparable with those obtained by the SIMSF sample. The overall results are some 17 per cent lower than the Ontario average.

102 Rationals

Students did much better on item 1,35 after revision. The FRANR students answered the item correctly 40 per cent of the time. Only 14 per cent of the SIMSF sample answered the item correctly. Performance is close to that of the SIMSO sample.

103 Integer Exponents

The students in our sample also had trouble with exponents. Performance is very little better than on SIMSF and lower than SIMSO.

104 Formulas

Students had difficulty in solving word problems. Overall performance is some 8 per cent better than SIMSF but still 7 per cent lower than SIMSO. Items 0,27 and 4,27 were indicated to be not equivalent to the English items on SIMSF. Both items were revised. The revision resulted in students doing much better on item 0,27 with performance rising from 39 per cent on SIMSF to 57 per cent on FRANR. Student performance on item 4,27 did not change after revision and was about 13 per cent correct in both instances. About 11 per cent of the students in our sample omitted this difficult item.

105 Polynomial Expressions

There were only two items in this group. Some 40 per cent of students in the FRANR sample were successful in replacing an X by a given value and selecting the correct answer. Only 14 per cent could correctly compute the difference of two fractions when the denominators were not alike and the numerators were letters. FRANR results on these to items were lower than SIMSF.

106 Equations and Inequations

Students in our sample answered three items correctly more than 50 per cent of the time. Item 0,13 which was omitted by some 22 per cent of the SIMSF sample was omitted by 13 per cent of the students in our sample indicating that students still lacked familiarity with the manipulation of linear equations. Overall results were some seven per cent better than on SIMSF and close to the SIMSO average.

107 Relations

The results on the two items asking students to transpose information given in tables to algebraic form are similar to those obtained by SIMSF. Performance was much higher (72 per cent correct) when students were given a formula and asked to perform a substitution. Results for the FRANR students were better than for SIMSF and close to SIMSO.

110 Finite Sets

No comparative data with SIMSF is available for the one item in this category. The FRANR students had a per cent correct score of 25 per cent correct, higher than the provincial average of 22 per cent correct.

TABLE 3 continued

100 ALGEBRA

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
101 Integers											
61	45	37	-8	-24	101	0	16		408	12	(-2) * (-3) IS EQUAL TO
49	36	43	7	-6	101	0	25	Y	408	13	THE AIR TEMPERATURE AT THE FOOT OF A MOUNTAN IS 31 DEGREES.
45	29	32	3	-13	101	2	30		104	113	(-6) - (-8) IS EQUAL TO
57	31	23	-8	-34	101	4	5	Y	102	82	THE SET OF INTEGERS LESS THAN 5 IS REPRESENTED ON ONE OF THE
66	49	59	10	-7	101	4	31		102	49	-5(6 - 4) IS EQUAL TO
56	38	39	1	-17	AVERAGES INTEGERS						
102 Rationals											
46	14	40	26	-6	102	1	35	Y	106	14	WHICH OF THE FOLLOWING SEQUENCES OF NUMBERS IS IN THE ORDER
46	14	40	26	-6	AVERAGES RATIONALS						
103 Integer Exponents											
38	23	26	3	-12	103	1	33		106	84	0.00046 IS EQUAL TO
21	14	20	6	-1	103	2	22	Y	104	172	FIND THE VALUE OF N. N = 10**3 + 10**1 + 10**0 + 10**(-2)
30	19	23	5	-7	AVERAGES INTEGER EXPONENTS						
104 Formulas											
58	39	57	18	-1	104	0	27	Y	408	149	A SHOPKEEPER HAS X KG OF TEA IN STOCK. HE SELLS 15 KG AND
51	26	34	8	-17	104	1	5	Y	106	195	A NUMBER X IS MULTIPLIED BY ITSELF AND THE RESULT IS ADDED T
45	16	30	14	-15	104	1	26		106	115	IF X = -3, THE VAUE OF -3X IS
18	22	10	-12	-8	104	2	24	Y	104	15	SIMPLIFY: 5X + 3Y + 2X - 4Y
51	34	55	21	4	104	2	29		104	85	IF Y DOLLARS ARE SHARED EQUALLY AMONG FOUR BOYS, HOW MANY
46	31	44	13	-2	104	3	12		104	52	THE COST OF PRINTING GREETING CARDS CONSISTS OF A FIXED
38	33	33	0	-5	104	3	16		104	116	IF X = Y = Z = 1, THEN (X - Z) / (X + Y) IS EQUAL TO
32	23	31	8	-1	104	3	24		104	148	WHICH OF THE FOLLOWING IS FALSE WHEN A, B, AND C ARE
26	14	13	-1	-13	104	4	27	Y	102	16	SODA COSTS A CENTS FOR EACH BOTTLE, BUT THERE IS A REFUND
41	26	34	8	-6	AVERAGES FORMULAS						
105 Polynomial Expressions											
65	47	40	-7	-25	105	1	28	Y	106	53	WHEN X = 2, (7X + 4) / (5X - 4) IS EQUAL TO
27	16	14	-2	-13	105	3	35		104	88	A/15 - B/5 IS EQUAL TO
46	32	27	-5	-19	AVERAGES POLYNOMIAL EXPRESSIONS						

TABLE 3 continued

106 Equations and Inequations SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
12	9	15	6	3	106	0	3		408	151	IF 5X + 4 = 4X - 31, THEN X IS EQUAL TO
74	60	61	1	-13	106	0	13	Y	408	17	IF P = LW AND IF P = 12 AND L = 3, THEN W IS EQUAL TO
53	40	48	8	-5	106	0	18		408	86	IF 4X/12 = 0, THEN X IS EQUAL TO
61	42	58	16	-3	106	0	35	Y	408	196	THE SENTENCE 'A NUMBER X DECREASED BY 6 IS LESS THAN 12' CAN
23	23	17	-6	-6	106	1	4	Y	106	87	THE DAVIS FAMILY TOOK A CAR TRIP FROM ANABRU THROUGH BERGEN
40	31	26	-5	-14	106	2	12	Y	104	18	THE ERROR IN THE ABOVE REASONING, IF ONE EXISTS, FIRST
52	26	47	21	-5	106	3	13		104	117	'SIX TIMES A CERTAIN NUMBER (CALL IT Q) EQUALS THE SUM OF
67	40	53	13	-14	106	4	20	Y	102	54	WHICH EQUATION IS TRUE FOR ALL VALUES OF N?
39	28	41	13	2	106	4	26		102	118	(X/2) < 7 IS EQUIVALENT TO
47	33	41	7	-6	AVERAGES EQUATIONS AND INEQUATIONS						

107 Relations SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
39	23	30	7	-9	107	0	30	Y	408	19	THE TABLE BELOW COMPARES THE HEIGHT FROM WHICH A BALL IS
23	20	16	-4	-7	107	2	5	Y	104	55	FOR THE TABLE SHOWN, A FORMULA THAT COULD RELATE M AND N IS
66	56	72	16	6	107	3	26	Y	104	152	A BOWLING BALL TRAVELS 4 METERS PER SECOND. THE DISTANCE IN
43	33	39	6	-3	AVERAGES RELATIONS						

110 Finite Sets SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
22		25		3	110	4	17	Y	102	120	THE SYMBOL P INTERSECT Q REPRESENTS THE INTERSECTION OF SETS
22	0	25	0	3	AVERAGES FINITE SETS						

200 GEOMETRY

201 Classification

Some 70 per cent of FRANR students were able to recognize an acute angle and a parallelogram. Performance on item 3,23 which offered two correct choices on SIMSF improved somewhat after revision from 23 per cent to 31 per cent correct on FRANR. For the category student performance improved by about 12 per cent over SIMSF to 53 per cent close to the SIMSO average of 58 per cent.

202 Properties

Three of the nine items were answered correctly by more than 77 per cent of the students in the FRANR sample. Three items 1,10 3,34 and 4,24 were singled out in SIMSF as being badly worded. After revision performance improved by 8 per cent on item 1,10, by 13 per cent on 3,34 and dropped slightly (3 per cent) on 4,24. In all three cases the performance on the revised items is comparable to the SIMSO average.

203 Congruence

These three items assessed the students' ability to deal with the properties of congruent triangles.The highest rate of success, 68 per cent correct, was obtained on item 4,16, where students simply had to identify a rectangle congruent to a given one. About 20 per cent of the students in our sample could correctly calculate the third angle in a triangle (congruent to a given one, item 1,6). When asked to visualize when two congruent triangles could be obtained if a certain figure were cut into two parts, 60 per cent of FRANR students gave the correct response. Performance on item 1,6 which contained an error in the stem used on SIMSF dropped after revision from 33 per cent to 20 per cent correct. On this entire category performance improved by 10 per cent over the SIMSF results to 49 per cent correct equal to the Ontario average.

204 Similarity

Students again demonstrated little familiarity with the properties of similar triangles. About 40 per cent of the students responded correctly to the two items that provided a diagram. Performance was about 30 per cent correct on the remaining two items for which no diagram was provided. The overall performance for this topic was some 4 per cent lower than on SIMSF.

205 Geometric Constructions

The single item in this topic was answered correctly by 25 per cent of the students in the FRANR sample. This was an improvement of 9 per cent over SIMSF and better than the SIMSO average.

206 Pythagorean

Item 2,25 required the identification of the Pythagorean theorem, while items 2,26 and 3,10 required the calculation of the length of one side, given the length of the other and the length of the hypotenuse. The success rate was higher on the latter two items than on the first: 10, 52 and 29 per cent respectively. Overall performance for this topic was much improved over SIMSF from 23 to 30 per cent correct, much closer to the SIMSO average of 34 per cent.

207 Coordinates

These five items are rather difficult with a provincial average of 34 per cent. Student performance improved by 11 per cent on average over SIMSF to 28 per cent correct, again much closer to the SIMSO average.

208 Deductions

Performance on these two items was also improved by 11 per cent over the SIMSF average per cent correct. The students in the FRANR sample averaged 34 per cent correct, again much closer to the Ontario average of 38 per cent correct.

209 Transformation (informal)

Two of the four items in this topic were answered correctly by more than 65 per cent of the students in the FRANR sample. Performance was rather low on the other two items, less than 30 per cent correct. Overall, performance on this group of items improved by 12 per cent over SIMSF, but was still below the provincial average.

212 Spatial Visualization

Some 63 per cent of the students in our sample answered the three items in this section correctly. These items were set in a rather everyday context rather than in a purely mathematical one. Performance was 17 per cent better on average than on SIMSF and better than the SIMSO average of 59 per cent correct.

215 Transformational Geometry

These four items were simply very complex questions that proved difficult for the English students as well. All students were generally unsuccessful in replying to these four items. THe rate of correct response achieved by the students in our sample was 26 per cent, about the same as the provincial average.

TABLE 3 continued

200 GEOMETRY

201 Classification	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
76	64	70	6	-6	201	0	17	Y	408	121	WHICH OF THE INDICATED ANGLES IS ACUTE?
51	26	41	15	-10	201	1	31	Y	106	57	THE FIGURE QRST IS A SQUARE AND PQT AN EQUILATERAL TRIANGLE.
65	51	70	19	5	201	2	21	Y	104	89	AB // DC AND AD // BC. QUADRILATERAL ABCD IS A
40	23	31	8	-9	201	3	23	Y	104	21	A QUADRILATERAL MUST BE A PARALLELOGRAM IF IT HAS
58	41	53	12	-5	AVERAGES CLASSIFICATION						

202 Properties --	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
43	31	32	1	-11	202	0	19	Y	408	23	THE LENGTH OF THE CIRCUMFERENCE OF THE CIRCLE WITH CENTER AT
72	67	77	10	5	202	0	22	Y	408	122	(TRIANGLE WITH 2 ANGLES GIVEN) X IS EQUAL TO
33	26	34	8	1	202	1	10	Y	106	58	LINES AB AND CD ARE PARALLEL. TWO ANGLES WHOSE MEASURES
61	56	81	25	20	202	1	27	Y	106	22	AB, CD, AD EF ARE INTERSECTING STRAIGHT LINES AS SHOWN
64	68	51	-17	-13	202	2	6	Y	104	90	THE LINE M IS A LINE OF SYMMETRY FOR FIGURE ABCDE. THE
18	17	27	10	9	202	2	8	Y	104	59	THREE STRAIGHT LINES INTERSECT AS SHOWN IN THE DIAGRAM.
35	23	39	16	4	202	3	34	Y	104	128	IF, IN THE GIVEN FIGURE, PQ AND RS ARE INTERSECTING STRAIGHT
71	60	80	20	9	202	4	19		102	155	IF AB IS A STRAIGHT LINE, WHAT IS THE MEASURE IN DEGREES OF
29	29	26	-3	-3	202	4	24	Y	102	123	IN A QUADRILATERAL, TWO OF THE ANGLES EACH HAVE MEASURE OF
47	42	50	8	2	AVERAGES PROPERTIES						

203 Congruence --	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
30	33	20	-13	-10	203	1	6	Y	106	25	THE TRIANGLES SHOWN ABOVE ARE CONGRUENT. THE MEASURES OF
44	26	60	34	16	203	3	29	Y	104	24	IF SEGMENT PQ WERE DRAWN FOR EACH FIGURE SHOWN BELOW, IT
72	57	68	11	-4	203	4	16		102	91	ONE OF THE FOLLOWING FIGURES IS CONGRUENT WITH THE FIGURE
49	39	49	11	1	AVERAGES CONGRUENCE						

204 Similarity --	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
48	40	37	-3	-11	204	0	40	Y	408	156	TRIANGLES PQR AND STU ARE SIMILAR. HOW LONG IS SU?
48	53	43	-10	-5	204	2	32		104	197	THE PICTURE ABOVE SHOWS HOW PEDRO USED A SHORT TREE TO FIND
25	34	30	-4	5	204	3	9		104	125	IF TWO TRIANGLES ARE SIMILAR, WHICH OF THE FOLLOWING
51	32	35	3	-16	204	4	15	Y	102	26	ON LEVEL GROUND, A BOY 5 UNITS TALL CASTS A SHADOW 3 UNITS
43	40	36	-4	-7	AVERAGES SIMILARITY						

205 Geometric Constructions -	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
20	16	25	9	5	205	1	14	Y	106	176	AMONG THE FOLLOWING LINES D1, D2, D3, D4, D5, WHICH HAS NO
20	16	25	9	5	AVERAGES GEOMETRIC CONSTRUCTIONS						

TABLE 3 continued

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
206 Pythagorean -											
22	8	10	2	-12	206	2	25	Y	104	93	WHICH OF THESE IS A CORRECT STATEMENT FOR THIS TRIANGLE?
47	34	52	18	5	206	2	26		104	193	(TRAPEZOID WITH DIMENSIONS) X IS EQUAL TO
32	26	29	3	-3	206	3	1	Y	104	27	(RIGHT TRIANGLE WITH 2 SIDES GIVE) WHAT IS THE VALUE OF S?
34	23	30	8	-3	AVERAGES PYTHAGOREAN						
207 Coordinates -											
37	15	30	15	-7	207	0	11	Y	408	175	ON A NUMBER LINE TWO POINTS A AND B ARE GIVEN. THE COORDINAT
48	29	50	21	2	207	0	39	Y	408	28	WHAT ARE THE COORDINATES OF POINT P?
21	16	13	-3	-8	207	1	34	Y	106	29	ONE OF THE FOLLOWING POINTS CAN BE JOINED TO THE POINT (-3,4
31	16	24	8	-7	207	3	11	Y	104	169	SUPPOSE YOU START AT POINT M(-1,-1), MOVE A DISTANCE OF ONE
33	11	23	12	-10	207	4	4		102	126	THE STRAIGHT LINE JOINING THE POINTS (2,3) AND (2,7) CUTS
34	17	28	11	-6	AVERAGES COORDINATES						
202 Deductions --											
42	30	45	15	3	208	0	21	Y	408	127	IN THE ABOVE DIAGRAM, TRIANGLES ABC AND DEF ARE CONGRUENT,
33	15	22	7	-11	208	2	13		104	62	IN THE ABOVE RECTANGLE THE MEASURE OF ANGLES ROQ IS
38	23	34	11	-4	AVERAGES DEDUCTIONS						
209 Transformation (Informal)											
76	25	70	45	-6	209	1	2	Y	106	30	IN WHICH DIAGRAM BELOW IS THE SECOND FIGURE THE IMAGE OF THE
45	27	27	0	-18	209	2	14	Y	104	96	TRIANGLE ABC AND TRIANGLE A'B'C' ARE CONGRUENT AND THEIR
68	67	65	-2	-3	209	3	32	Y	104	158	TRIANGLE PQT CAN BE ROTATED (TURNED) ONTO TRIANGLE SQR. THE
31	23	28	5	-3	209	4	29	Y	102	63	PQRS IS A RECTANGLE. ITS IMAGE AFTER A TRANSFORMATION IS
55	36	48	12	-8	AVERAGES TRANSFORMATION (INFORMAL)						
212 Spatial Visualization ---											
68	42	66	24	-2	212	0	7	Y	408	31	THE DIAGRAM SHOWS A CARDBOARD CUBE WHICH HAS BEEN CUT ALONG
63	53	62	9	-1	212	1	15	Y	106	159	THE FIGURE ABOVE SHOWS A WOODEN CUBE WITH ONE CORNER CUT OFF
46	43	61	18	15	212	3	4	Y	104	198	WHICH OF THE FOLLOWING PATTERNS CAN BE FOLDED ALONG THE
59	46	63	17	4	AVERAGES SPATIAL VISUALIZATION						
215 Transformational Geometry											
19	4	24	20	5	215	1	8	Y	106	171	IF D IS THE DIRECTION OF PROJECTION AND A IS THE AXIS OF
17	24	8	-16	-9	215	2	11	Y	104	173	U AND V ARE TWO VECTORS. WHICH FIGURE BELOW REPRESENTS U - V
22	22	28	6	6	215	4	18	Y	102	170	GIVEN VECTOR V AND VECTOR W AS SHOWN IN THE FIGURE ABOVE,
50	29	45	16	-5	215	4	22	Y	102	174	A HALF-TURN ABOUT O IS APLIED TO THE FIGURE ABOVE. WHICH OF
27	20	26	7	-1	AVERAGE TRANSFORMATIONAL GEOMETRY						

300 PROBABILITY AND STATISTICS

301 Collection

Performance statistics for the single item in this topic are not available for the SIMSF sample. The students in our sample did very well on this item, 73 per cent of them answering it correctly. This compares favorably with the Ontario average of 75 per cent correct.

302 Organization

Performance on these three items ranged from about 40 per cent to 71 per cent correct for the students in the FRANR sample. Overall, performance was just a little better than SIMSF and close to the SIMSO average of 56 per cent correct.

303 Representation

The percentage of correct responses by students in our sample varies from a low of 18 per cent for item 2,4 to a high of 84 per cent on item 4,21 with an average of 57 per cent correct. This average is 9 per cent higher than SIMSF and similar to the Ontario average of 58 per cent correct. The correction of the error in item 1,22 noted in SIMSF raised the per cent correct score from 67 to 80 per cent.

304 Mean, Median, Mode

More than 75 per cent of the students in the FRANR sample were able to answer the first two questions on this topic correctly. Only some 45 per cent were able to answer the next three items correctly. Performance on the last item was a low 26 per cent correct. On this topic as a whole, performance averaged 55 per cent correct an improvement of 13 per cent over SIMSF and much closer to the SIMSO average of 60 per cent correct.

306 Probability

Performance by the students in our sample was improved by 19 per cent over SIMSF. Their score of 45 per cent correct is better than the provincial average of 41 per cent correct.

TABLE 3 continued

300 PROBABILITY AND STATISTICS

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
301 Collection --											
75		73		-2	301	3	7	Y	104	65	YOU WISH TO KNOW ABOUT THE POPULARITY OF THE SOFT-DRINK SLOS
75	0	73	0	-2	AVERAGES COLLECTION						
302 Organization											
43	40	43	3	0	302	1	12	Y	106	97	A TABLE SHOWS SCORES FOR A CLASS ON A 10-POINT TEST. HOW MAN
52	47	42	-5	-10	302	2	3		104	131	THE PETALS ON 100 FLOWERS OF DIFFERENT KINDS WERE CAREFULLY
72	60	71	11	-1	302	4	34	Y	102	32	HERE IS A TABLE THAT SHOWS THE NUMBER OF TREES PLANTED ALONG
56	49	52	3	-4	AVERAGES ORGANIZATION						
303 Representation											
53	39	42	3	-11	303	1	19	Y	106	66	THE GRAPH SHOWS THE DISTANCE TRAVELED BY A TRACTOR DURING A
84	67	80	13	-4	303	1	22	Y	106	33	THE CIRCLE GRAPH SHOWS THE PROPORTION OF VARIOUS GRAIN CROPS
20	19	18	-1	-2	303	2	4	Y	104	129	THERE ARE 7,000,000 GIRLS UNDER THE AGE OF 21 IS A COUNTRY
50	44	52	8	2	303	2	19		104	161	HOW MUCH LONGER DOES IT TAKE FOR CAR B TO GO 50 KILOMETERS
51	43	47	4	-4	303	3	10	Y	104	160	THREE HOURS AFTER STARTING, CAR A IS HOW MANY KM AHEAD OF CA
67	51	73	22	6	303	4	8	Y	102	98	HERE IS A TABLE OF DATA AND A GRAPH OF THE SAME DATA. WHAT I
81	72	84	12	3	303	4	21	Y	102	34	WHICH OF THESE IS A TRUE STATEMENT ABOUT THE INFORMATION
58	48	57	9	-1	AVERAGES REPRESENTATION						
304 Mean, Median, Mode -											
81	75	76	1	-5	304	1	11	Y	106	132	A TEAM SCORES AN AVERAGE OF 3 POINTS PER GAME OVER 5 GAMES.
78	73	85	12	7	304	2	9	Y	104	67	JOE HAD THREE TEST SCORES OF 78, 76 AND 74, WHILE MARY HAD
49	25	42	17	-7	304	3	27	Y	104	99	IN THE GRAPH, RAINFALL IN CENTIMETERS IS PLOTTED FOR 13 WEEK
47	26	50	24	3	304	3	30	Y	104	35	THE ARITHMETIC MEAN (AVERAGE) OF: 1.50, 2.40, 3.75 IS EQUAL
59	35	48	13	-11	304	4	11	Y	102	162	THE GRAPH SHOWS THE TIME OF TRAVEL BY PUPILS FROM HOME TO
45	18	26	8	-19	304	4	35	Y	102	130	THE WEIGHT GAIN FROM 6 TO 10 MONTHS WAS
60	42	55	13	-5	AVERAGES MEAN, MEDIAN, MODE						
Probability											
41	26	45	19	4	306	3	6	Y	104	163	THERE ARE FIVE BLACK BUTTONS AND ONE RED BUTTON IN A JAR. IF
41	26	45	19	4	AVERAGES PROBABILITY						

400 MEASUREMENT

401 Units

Students in our sample did considerably better on this topic than did the students in the SIMSF sample. Item 0,1 which was difficult for the SIMSF students (27 per cent correct), was answered correctly by 48 per cent of the FRANR students, this score is similar to the Ontario average for this item. For the five items on this topic the FRANR students averaged 66 per cent correct, 13 per cent better than the SIMSF students and the same as the SIMSO average.

402 Estimation

Performance for the students in our sample on the six items in this topic ranged from a low of 31 per cent to a high of 93 per cent correct, with an average of 54 per cent correct. This was some 4 per cent better than SIMSF and closer to the provincial average of 62 per cent correct.

403 Approximation

The rewording of the three items in this category improved student performance on all three of these items by an average of 13 per cent over SIMSF. The topic average of 38 per cent correct for the students in the FRANR sample is still far off the provincial average of 56 per cent correct.

404 Determining Measures

Performance was poor on this sub-category of 12 items dealing with area and volume. The percentage of correct responses ranged from 4 to 59 per cent with an average of 30 per cent. It appears that students are not familiar with shapes such as parallelograms or with the terminology used. Ten of the 12 items were reworded as a part of this project, still performance improved by only 5 per cent on average and is still not at the level of the provincial average.

TABLE 3 continued

400 MEASUREMENT

SIMSO	SIMSF	FRANR	CHANGE	DIFF	TOPIC	FORM	ITEM	REV	SAMPLE	HUNO	ABBREVIATED ITEM STEM
401 Units -											
45	27	48	21	3	401	0	1		408	100	2 METERS + 3 MILLIMETERS IS EQUAL TO
90	86	94	8	4	401	0	29	V	408	68	THE DISTANCE BETWEEN TWO TOWNS IS USUALLY MEASURED IN
82	70	85	15	3	401	1	7	V	106	101	A 15 CENTIMETER PIECE IS CUT FROM A RIBBON 1 METER LONG. WHA
62	46	64	18	2	401	3	2	V	104	36	WHICH OF THE FOLLOWING IS ... TO THE WEIGHT OF A NORMAL MAN?
47	38	41	3	-6	401	4	23		102	133	HOW MANY PIECES OF PIPE EACH 20 METERS LONG WOULD BE REQUIRE
65	53	66	13	1	AVERAGES UNITS						
402 Estimation --											
67	54	61	7	-6	402	0	6	V	408	167	THE AREA OF THE SHADED FIGURE, TO THE NEAREST SQUARE UNIT, I
93	88	93	5	0	402	0	8	V	408	69	THE LENGTH OF AB IS 1 UNIT. WHICH IS THE BEST ESTIMATE FOR
51	36	44	8	-7	402	0	9	V	408	38	ON THE ABOVE SCALE THE READING INDICATED BY THE ARROW IS
43	32	31	-1	-12	402	2	17	V	104	102	THE MEASURE OF THE ANGLE SHOWN IS NEAREST TO
52	40	40	0	-12	402	4	7	V	102	134	EACH OF THE SMALL SQUARES IN THE FIGURE IS 1 SQUARE UNIT.
68	48	56	8	-12	402	4	30	V	102	164	ACCORDING TO THE SCALE SHOWN, THE LENGTH OF SIDE BC OF A
52	50	54	5	-8	AVERAGES ESTIMATION						
403 Approximation											
57	24	40	16	-17	403	0	5	V	408	165	WHICH OF THE FOLLOWING IS THE CLOSEST APPROX. TO THE AREA OF
47	18	29	11	-18	403	1	9	V	106	72	THE FIGURE ABOVE SHOWS A RECTANGULAR BOX. WHICH OF THE
63	34	45	11	-18	403	2	31	V	104	135	THE LENGTH OF A BOX WAS MEASURED AND FOUND TO BE 9 CM TO THE
56	25	38	13	-18	AVERAGES APPROXIMATION						
404 Determining Measures											
16	4	4	0	-12	404	0	10	V	408	168	A SOLID PLASTIC CUBE WITH EDGES 1 CM LONG WEIGHS 1 GRAM.
62	24	30	6	-32	404	0	23	V	408	103	A SQUARE IS REMOVED FROM THE RECTANGLE AS SHOWN. WHAT IS THE
38	9	29	20	-9	404	1	20	V	106	70	WHAT IS THE AREA OF THE ABOVE PARALLELOGRAM?
32	26	28	2	-4	404	1	29	V	106	194	WHAT IS THE AREA OF TRIANGLE PQR?
36	22	22	0	-14	404	2	18	V	104	71	THE RECTANGLE SHOWN ABOVE IS CUT ALONG THE DOTTED LINES, AND
35	24	23	-1	-12	404	2	28	V	104	37	THE TOTAL AREA OF THE TWO TRIANGLES IS
21	23	26	3	5	404	3	15	V	104	136	WHAT IS THE CAPACITY OF A CUBIC CONTAINER 10 CM BY 10 CM BY
60	43	53	10	-7	404	3	17		104	104	MICHAEL HAS A LARGE NUMER OF WOODED BLOCKS WHICH ARE CUBICAL
21	15	16	1	-5	404	3	20	V	104	166	WHAT IS THE SURFACE AREA OF THIS SOLID RECTANGULAR BOX?
31	21	23	2	-8	404	3	31		104	40	THERE IS A BRASS PLATE OF THE SHAPE AND DIMENSIONS SHOWN IN
66	45	41	-4	-25	404	4	2	V	102	39	WHAT IS THE VOLUME OF A RECTANGULAR BOX WITH INTERIOR
65	46	59	13	-6	404	4	9	V	102	199	THE AREA OF THE SHADED CIRCLE IS WHAT PART OF THE AREA OF TH
40	25	30	4	-11	AVERAGES DETERMINING MEASURES						
50	35	44	8	-6	AVERAGES GRAND TOTAL						

7. SUMMARY OF RESULTS

The francophone students in our enlarged sample, answering the revised test items, still found the tests to be more difficult than did their anglophone counterparts in the SIMS study. Fewer than 50 per cent of the FRANR students were able to answer 117 (65 per cent) of the 180 items correctly. However, on the remaining 63 (35 per cent) items between 50 and 93 per cent of the students in the FRANR sample were able to answer correctly. This is an improvement of 28 items (20 per cent) over the 35 items on which the students in the SIMSF sample had a per cent correct score of between 50 and 88 per cent correct. Over the entire 180 items the FRANR per cent correct score was 44 per cent correct, an improvement of 9 per cent over the SIMSF results.

FRANR students scored the same or higher on 143 of the 174 items for which comparative data for the SIMSF sample is available. On 72 of these items the change in per cent correct score was 10 per cent or more.

7.1. COMPARISON WITH THE ONTARIO SAMPLE

The students in the FRANR sample did not score as highly as did the students in the all Ontario sample. The Ontario average for the 180 test items was 50 per cent correct, while the students in our sample scored 44 per cent correct. Much closer to the provincial average than the students in the SIMSF sample, but still lower.

8. CONCLUSIONS

It is difficult to assess exactly how much effect the revisions made to the test items had in producing the generally higher per cent correct scores obtained by the the FRANR sample over the SIMSF sample. There is however, some evidence to suggest that the revised test items played an important role in achieving the higher scores.

The results obtained on the revised items in the core form (form 0), indicated that higher results were obtained more often on the revised items than on the unrevised ones. Further the percentage of students omitting questions on the FRANR sample is closer to the rate of omissions for the SIMSO sample than is the rate for the SIMSF sample.

This possibly indicates that there was a lower level of frustration with the tests for FRANR students since many of the items were better worded. This made the items in the test booklets easier to understand, which in turn made the tests easier to do, thus helping to raise the achievement of the enlarged francophone sample.

The results obtained by our enlarged student sample and revised test items is very likely a more accurate reflection of mathematics achievement in grade 8 in francophone schools in Ontario than are the results obtained for this stratum of the population in the SIMS.

References

Hanna, G. & Cousins, B. *Mathematics teaching and achievement in Franco-Ontarian schools: grade 8*. Educational Evaluation Centre, The Ontario Institute for Studies in Education, Toronto, 1984.

McLean, L., Raphael, D. & Whalstrom, M. *Intentions and attainments in the teaching and learning of mathematics: Report on the Second International Mathematics Study*. Educational Evaluation Centre, The Ontario Institute for Studies in Education, Toronto, 1986.

Appendices

Appendix I

The revised French test booklets. Forms 3L, 2LA, 2LB, 2LC and 2LD.

Appendix II

Detailed item analysis of the results of the enlarged francophone sample's performance on the revised French items.

Appendix III

The original French test booklets as used in the the Second International Mathematics Study in Ontario. Forms 3L, 2LA, 2LB, 2LC and 2LD.

Appendix IV

Hanna, G. & LaDouceur, A. Les bias dans les traductions françaises des tests de la seconde enquête internationale sur l'enseignement des mathématiques. *For the Learning of Mathematics 6, 4*, June 1986, 29-41.

Appendix V

Hanna, G. Disparities in the translation of the cognitive tests in the Second International Mathematics Study. *Psychology of Mathematics Education: Proceedings of the tenth international conference*. University of London Institute of Education, 1986, 348-353.

Library

TRANSFER GRANT PROJECT OUPUTS

Funding Year: 1986-1987 Project Number: 54-1027

Project Title: The Second International Mathematics Study in the French-language Schools of Ontario

Investigator(s): Vincent Gaudino, Gila Hanna, Richard Wolfe

Budget Unit: MECA Date Rec'd in FS&R: Jan 8/87

Please list below under two separate headings, Actual Outputs and Anticipated Outputs. Please provide as much detail as possible including present status, e.g., mimeo for distribution, submitted for publication, etc. If you are not providing copies of actual outputs as appendices to your report, please provide one copy for filing in the OISE Library.

Actual Outputs

Hanna, G. & LaDouceur, A. Les bias dans les traductions françaises des tests de la seconde enquête internationale sur l'enseignement des mathématiques. *For the Learning of Mathematics 6, 4*, June 1986, 29-41.

Hanna, G. Disparities in the translation of the cognitive tests in the Second International Mathematics Study. *Psychology of Mathematics Education: Proceedings of the tenth international conference*. University of London Institute of Education, 1986, 348-353.

Anticipated Outputs

Summary reports to the schools and board. To be completed by mid-July, 1987.

Appendix I

The revised French test booklets.

Forms 3L, 2LA, 2LB, 2LC and 2LD.

Association internationale pour
l'évaluation du rendement scolaire

SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE DE MATHEMATIQUE
SERIE COMMUNE

LIVRET 3L

Institut d'études
pédagogiques de l'Ontario

(Rev. 86)

1. 2 m + 3 mm est égal à:

   A 2,0003 m

   B 2,003 m

   C 2,03 m

   D 2,3 m

   E 5 m

2. $\frac{1}{5}$ est égal à:

   A 0,20%

   B 2%

   C 5%

   D 20%

   E 25%

3. Si $5x + 4 = 4x - 31$, alors x est égal à:

   A -35

   B -27

   C 3

   D 27

   E 35

4. Pour un repas on a acheté quatre boîtes de 1 L de crème glacée. Après le repas, une boîte est vide, deux sont à moitié pleines et une est aux trois-quarts pleine. Combien de litres de crème glacée a-t-on mangé?

   A $3\frac{3}{4}$ L

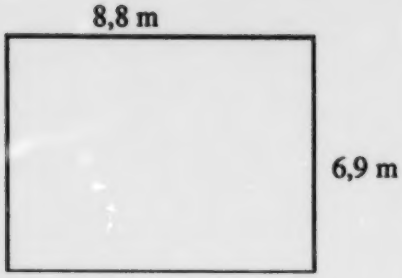
   B $2\frac{3}{4}$ L

   C $2\frac{1}{2}$ L

   D $1\frac{3}{4}$ L

   E Aucune de ces réponses

5.



Quelle est la meilleure estimation de l'aire de ce rectangle?

A 48 m²

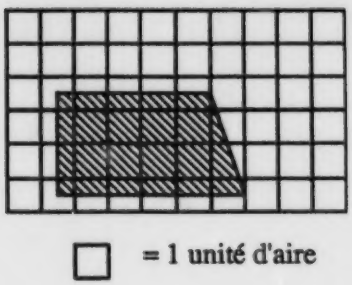
B 54 m²

C 56 m²

D 63 m²

E 72 m²

6.



Quelle est l'aire de la partie hachurée, à l'unité près?

A 23 unités d'aire

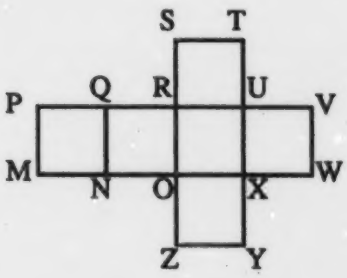
B 20 unités d'aire

C 18 unités d'aire

D 15 unités d'aire

E 12 unités d'aire

7.



Un cube en carton a été coupé le long de certaines arêtes, puis déplié à plat. Si on le plie de nouveau pour refaire le cube, quels sont les deux coins qui toucheront au point P?

A Les points Q et S

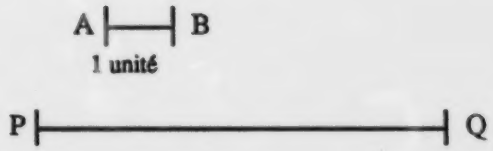
B Les points T et Y

C Les points W et Y

D Les points T et V

E Les points U et Y

8.



La longueur de $\overline{AB}$ est 1 unité. Quelle est la meilleure estimation de la longueur de $\overline{PQ}$?

A 2 unités

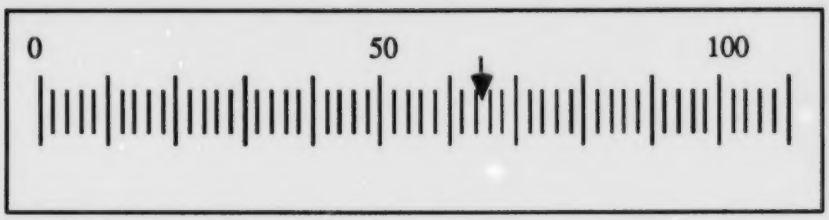
B 6 unités

C 10 unités

D 14 unités

E 18 unités

9.



La flèche, sur cette échelle, est entre les nombres:

A 51 et 52

B 57 et 58

C 60 et 62

D 62 et 64

E 64 et 66

10. Un cube en plastique de 1 cm de côté a une masse de 1 g. Quelle sera la masse d'un cube du même plastique mais mesurant 2 cm de côté?

A 8 g

B 4 g

C 3 g

D 2 g

E 1 g

11. A et B sont deux points sur une droite numérique. La coordonnée de A est -3, et la coordonnée de B est +7. Quelle est la coordonnée du point C si B est situé au milieu du segment $\overline{AC}$?

A - 13

B $-\frac{1}{2}$

C + 2

D + 12

E + 17

12. Un peintre mélange de la peinture verte et de la peinture jaune dans le rapport de 4 pour 7 pour obtenir la teinte désirée. S'il a 28 L de peinture verte, combien doit-il ajouter de litres de peinture jaune?

A 11 L

B 16 L

C 28 L

D 49 L

E 196 L

13. P = LW. Si P = 12 et L = 3, alors W est égal à:

A $\frac{3}{4}$

B 3

C 4

D 12

E 36

14. On construit un modèle réduit de bateau: la longueur du modèle réduit est $\frac{1}{10}$ de celle du bateau d'origine. Si la largeur du bateau d'origine est de 4 mètres, quelle doit être la largeur du modèle réduit?

A 0,1 m

B 0,4 m

C 1 m

D 4 m

E 40 m

15. 0,2131 x 0,02958 est à peu près égal à:

A 0,6

B 0,06

C 0,006

D 0,0006

E 0,00006

16. (-2) x (-3) est égal à:

A -6

B -5

C -1

D 5

E 6

17. Lequel de ces angles est AIGU?

A

B

C

D

E

18. Si $\frac{4x}{12} = 0$, alors x est égal à:

A 0

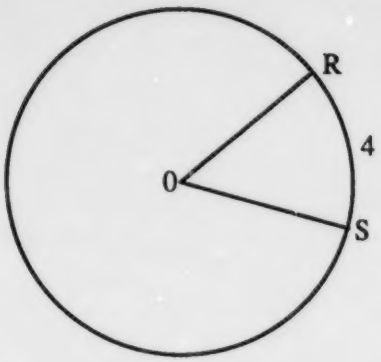
B 3

C 8

D 12

E 16

19.



La longueur de la circonférence de ce cercle de centre 0 est 24. La longeur de l'arc RS est 4. Quelle est la mesure, en degrés, de l'angle ROS?

A 24

B 30

C 45

D 60

E 90

20. Dans une compétition de lancer du disque, le meilleur lanceur a atteint 61,60 m et le second 59,72 m. De quelle longueur le meilleur lanceur dépasse-t-il le second?

A 1,12 m

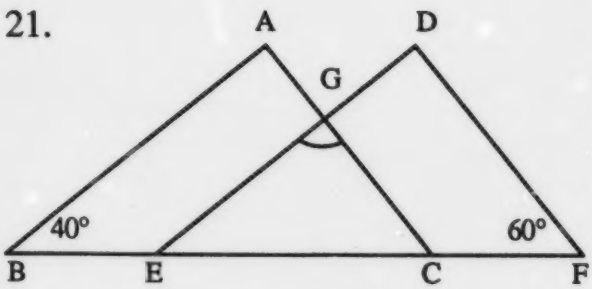
B 1,88 m

C 1,92 m

D 2,12 m

E 121,32 m

21.



Sur ce dessin, les triangles ABC et DEF sont congrus et BC = EF. Quelle est la mesure de l'angle EGC?

A 20°

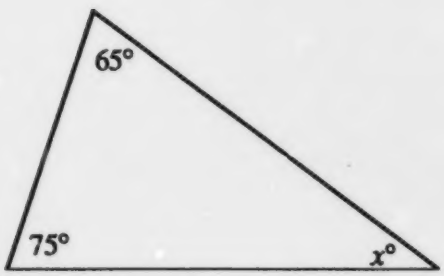
B 40°

C 60°

D 80°

E 100°

22.



x est égal à:

A 75°

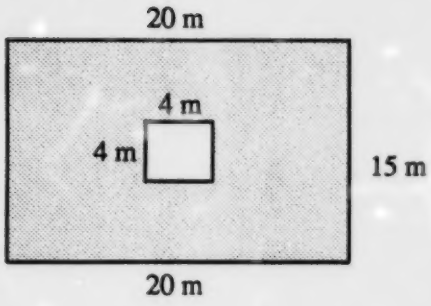
B 70°

C 65°

D 60°

E 40°

23.



De ce rectangle, on retire le carré tel qu'indiqué. Quelle est l'aire de la partie restante?

A $316\ m^2$

B $300\ m^2$

C $284\ m^2$

D $80\ m^2$

E $16\ m^2$

25. La température au pied d'une montagne est de 31°C. Au sommet, elle est de -7°C. De combien la température est-elle plus chaude au pied de la montagne?

A -38°

B -24°

C 7°

D 24°

E 38°

24. On vend du tissu au mètre carré. Sachant que $6\ m^2$ de tissu coûtent $4,80, combien coûteront $16\ m^2$ de tissu?

A $12,80

B $14,40

C $28,80

D $52,80

E $128

26. 0,40 x 6,38 est égal à:

A 0,2552

B 2,452

C 2,552

D 24,52

E 25,52

27. Un commerçant a x kg de thé en stock. Il en vend 15 kg et reçoit ensuite un nouveau lot de $2y$ kg. Combien de kg de thé a-t-il maintenant?

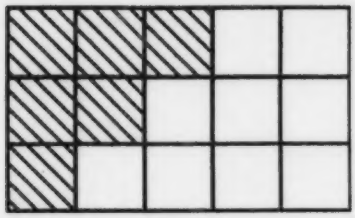
A $x - 15 - 2y$

B $x + 15 + 2y$

C $x - 15 + 2y$

D $x + 15 - 2y$

E Aucune de ces réponses

28. 

Sur la figure, les petits carrés ont tous la même taille. Si l'aire du rectangle entier est égale à 1, l'aire de la partie hachurée est égale à:

A $\frac{2}{15}$

B $\frac{1}{3}$

C $\frac{2}{5}$

D $\frac{3}{8}$

E $\frac{1}{2}$

29. On mesure habituellement la distance entre deux villes en:

A millimètres

B centimètres

C décimètres

D mètres

E kilomètres

30. Le tableau ci-dessous compare la hauteur (H) d'où une balle est lâchée avec la hauteur jusqu'où elle rebondit (r).

H	50	80	100	150
r	25	40	50	75

Quelle formule décrit cette relation?

A $r = H^2$

B $r = 2H$

C $r = \frac{H}{2}$

D $r = H + 25$

E $r = H - 25$

31. $\frac{2}{5} + \frac{3}{8}$ est égal à:

A $\frac{5}{13}$

B $\frac{5}{40}$

C $\frac{6}{40}$

D $\frac{16}{15}$

E $\frac{31}{40}$

32. $7\frac{3}{20}$ est égal à:

A 7,03

B 7,15

C 7,23

D 7,3

E 7,6

33. Dans une école de 800 élèves, 300 sont des garçons. Le rapport du nombre de garçons au nombre de filles est:

A 3 : 8

B 5 : 8

C 3 : 11

D 5 : 3

E 3 : 5

34. Le nombre 20 est égal à quel pourcentage du nombre 80?

A 4%

B 20%

C 25%

D 40%

E Aucune de ces réponses

35. Par quelle inéquation se traduit la phrase suivante: "*un nombre x, diminué de 6 est plus petit que 12*" ?

A $x - 6 > 12$

B $x - 6 \geq 12$

C $x - 6 < 12$

D $6 - x \geq 12$

E $6 - x < 12$

36. 30 représente 75% du nombre:

A 40

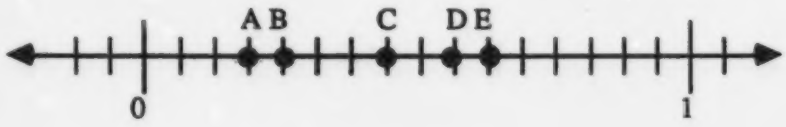
B 90

C 105

D 225

E 2250

37. Sur l'axe ci-dessous, le point correspondant à $\frac{5}{8}$ est:



A le point A

B le point B

C le point C

D le point D

E le point E

38. 20% de 125 est égal à:

A 6,25

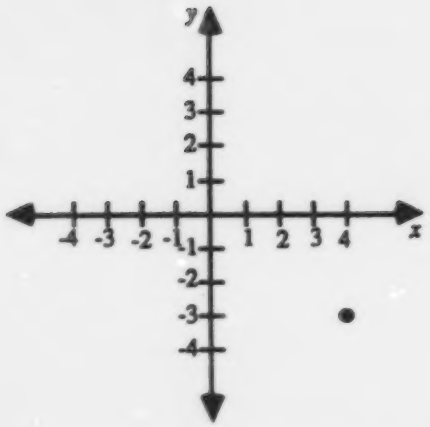
B 12,50

C 15

D 25

E 50

39.



Les coordonnées du point P sont:

A (-3, 4)

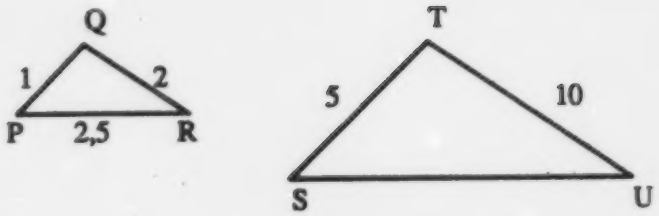
B (-4, -3)

C (3, 4)

D (4, -3)

E (-4, 3)

40.



Les triangles PQR et STU sont semblables.
Quelle est la mesure du côté SU?

A 5

B 10

C 12,5

D 15

E 25

Association internationale pour
l'évaluation du rendement scolaire

SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE - DE MATHEMATIQUE

LIVRET 2LA

Institut d'études
pédagogiques de l'Ontario

(Rev. 86)

1. Le quart d'un million est égal à:

A 25 250

B 40 000

C $\frac{1}{4\,000\,000}$

D 250 000

E 2 500 000

2. Parmi les cinq paires de figures suivantes, quelle est la paire dont la deuxième figure est l'image de la première figure par symétrie (réflexion) par rapport à une droite?

A

B

C

D

E

3. Quelle est l'approximation la plus proche de la réponse à : $5\frac{3}{7} + 6\frac{5}{8}$?

A à peu près 8

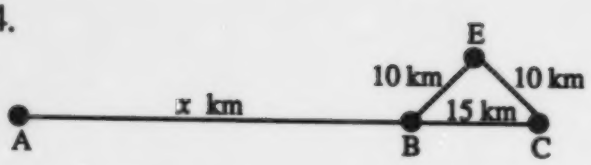
B à peu près 11

C à peu près 12

D à peu près 15

E à peu près 31

4.



Les Dupont font une excursion en automobile de A à C en passant par B. Puis ils reviennent à B en passant par E, et rentrent chez eux à A. Ils ont parcouru en tout 115 kilomètres. Quelle est la distance entre A et B?

A 20 km

B 35 km

C 40 km

D 75 km

E 80 km

5. Un nombre x est multiplié par lui-même puis le résultat est ajouté à 4 fois le nombre initial. Ce calcul s'exprime par:

A $x^2 + 4$

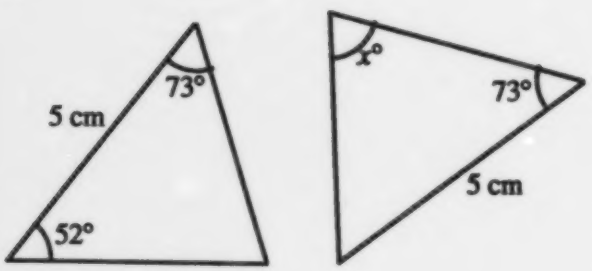
B $x + 4$

C $2x + 4$

D $x(x^2 + 4)$

E $x^2 + 4x$

6.



Les deux triangles illustrés ci-dessus sont congrus. Les mesures de certains angles et de certains côtés sont indiquées. Quelle est la valeur de x?

A 52°

B 55°

C 65°

D 73°

E 75°

7. Dans un ruban de un mètre de long, on coupe un morceau de 15 cm. Quelle est la longueur de la pièce restante?

A 85 cm

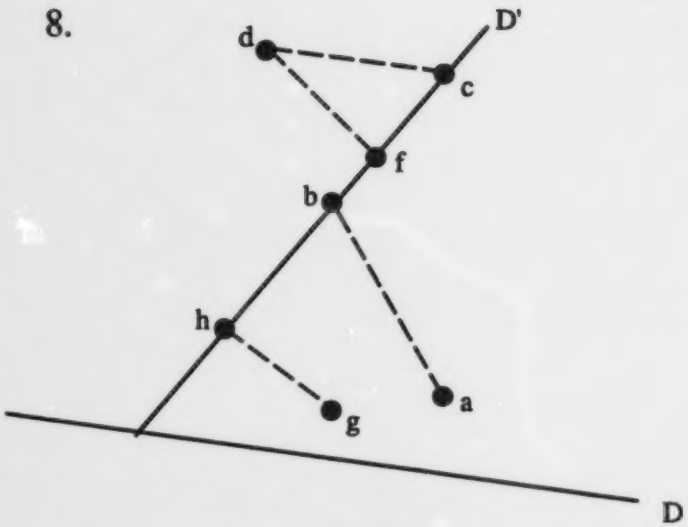
B 115 cm

C 985 cm

D 1015 cm

E 9985 cm

8.



D est la direction de projection et D' la droite sur laquelle on projette. Quelle est l'affirmation correcte?

A Projection de a = b

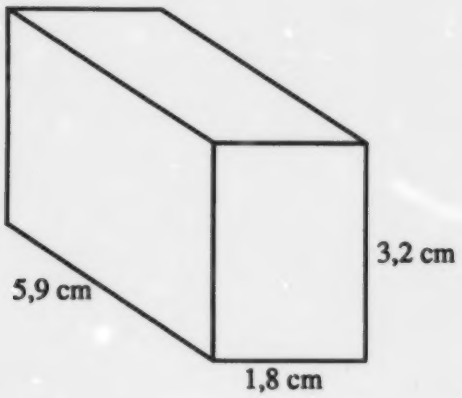
B Projection de d = c

C Projection de d = f

D Projection de g = h

E Projection de c = d

9.



La figure ci-dessus représente une boîte rectangulaire. Parmi ces nombres, quel est le plus proche du volume de la boîte?

A 16 cm^3

B 18 cm^3

C 28 cm^3

D 36 cm^3

E 48 cm^3

10. Les droites D et D' sont parallèles. Deux angles dont la somme des mesures est 180° sont:

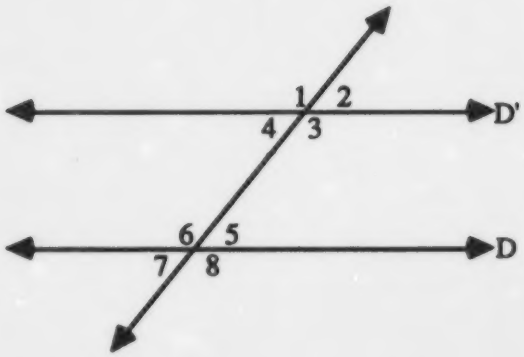
A $\angle 1$ et $\angle 3$

B $\angle 4$ et $\angle 6$

C $\angle 2$ et $\angle 5$

D $\angle 2$ et $\angle 7$

E $\angle 1$ et $\angle 8$



11. Sur cinq jeux, une équipe a marqué en moyenne 3 points par jeu. Combien a-t-elle totalisé de points sur ces 5 jeux?

A $\frac{3}{5}$

B $\frac{5}{3}$

C 3

D 5

E 15

12. Ce tableau donne la répartition des notes des élèves d'une classe à un devoir noté sur 10 points. Combien d'élèves de cette classe ont obtenu une note supérieure à 7?

Notes	Comptage	Nombre d'élèves
4	/	1
5	///	3
6	𝍸 /	6
7	//	2
8	////	4
9	///	3
10	/	1

A 2

B 8

C 10

D 12

E 20

13. $\frac{3}{8} - \frac{1}{5}$ est égal à:

A $\frac{1}{20}$

B $\frac{7}{40}$

C $\frac{7}{20}$

D $\frac{19}{40}$

E $\frac{2}{3}$

14. Parmi les droites d_1, d_2, d_3, d_4 et d_5, laquelle n'a aucun point équidistant de P et de Q?

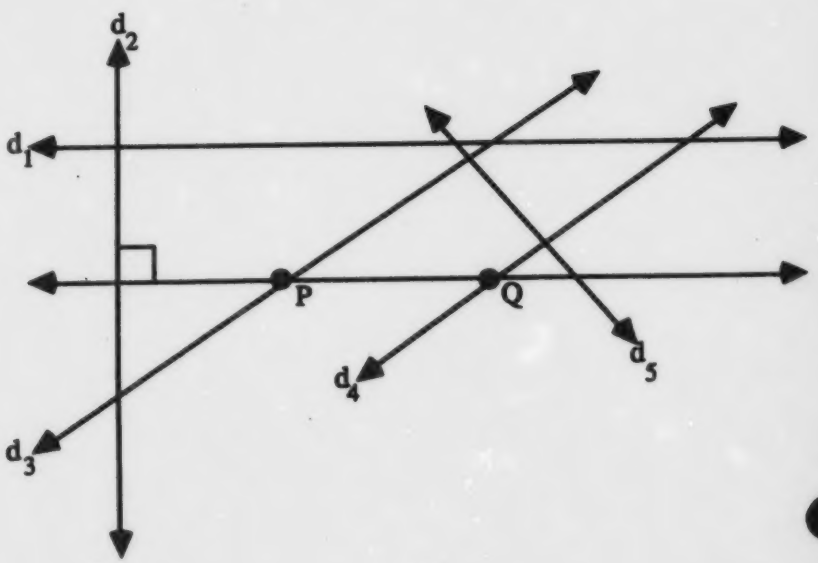
A d_1

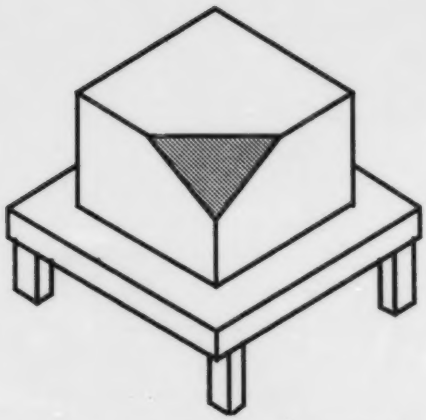
B d_2

C d_3

D d_4

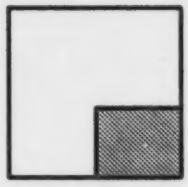
E d_5





15. Cette figure montre un cube dont un coin a été coupé et la découpe noircie. Laquelle des figures suivantes voit-on en regardant ce cube directement du dessus?

A

B 

C

D

E

16.

x	3	6	P
y	7	Q	35

Ce tableau indique les valeurs de x et de y, x étant proportionnel à y. Quelles sont les valeurs de P et Q?

A P = 14 et Q = 31

B P = 10 et Q = 14

C P = 10 et Q = 31

D P = 14 et Q = 15

E P = 15 et Q = 14

17. 1ère ligne 1
2ème ligne 1 - 1
3ème ligne 1 - 1 + 1
4ème ligne 1 - 1 + 1 - 1
5ème ligne 1 - 1 + 1 - 1 + 1

Quelle est la somme de la cinquantième ligne?

A 0

B 1

C 2

D 25

E 30

18

Sur l'échelle, la valeur indiquée par la flèche est:

A 1,004

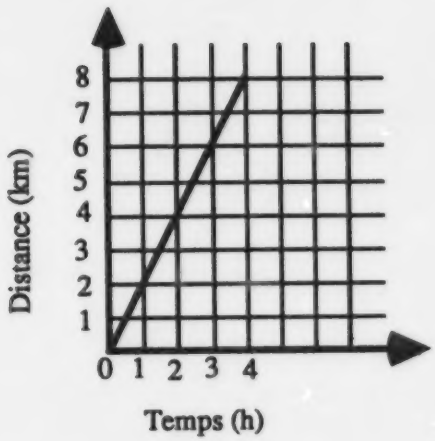
B 1,04

C 1,08

D 1,4

E 1,8

19.



Le graphique montre la distance parcourue par un tracteur en 4 heures. Quelle est sa vitesse en kilomètre/heure?

A 1 km/h

B 2 km/h

C 4 km/h

D 8 km/h

E Il n'y a pas assez d'informations

20. L'aire du parallélogramme est égale à:

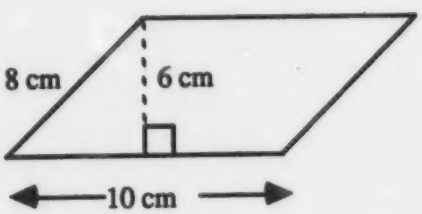
A 30 cm^2

B 36 cm^2

C 48 cm^2

D 60 cm^2

E 80 cm^2



21. 24,56 ÷ 0,004
Le résultat de cette division est:

A 0,614

B 6,14

C 61,4

D 614

E 6140

22.

Ce diagramme en secteurs montre la proportion des récoltes des différentes céréales produites par un pays. Laquelle des affirmations suivantes est vraie?

A On a produit plus d'avoine que de seigle

B La récolte d'orge est la plus grande

C Les récoltes d'orge et de blé sont égales

D La récolte d'avoine est la plus petite

E Les récoltes de blé et d'avoine réunies ne dépassent pas la moitié de la récolte totale

23. Un article coûte \$100. Son prix est d'abord augmenté de 10% puis ensuite ce nouveau prix est diminué de 10%. Quel est le prix final de l'article?

A \$90

B \$99

C \$100

D \$101

E \$110

24. Si $10^2 \times 10^3 = 10^n$, alors n est égal à:

A 4

B 5

C 6

D 8

E 9

25. Une voiture met 15 min pour couvrir 10 km. Quelle est sa vitesse?

A 30 km/h

B 40 km/h

C 60 km/h

D 90 km/h

E 150 km/h

26. Si $x = -3$, alors $-3x$ est égal à:

A -9

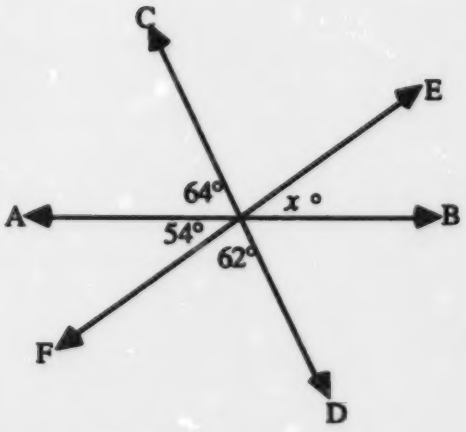
B -6

C -1

D 1

E 9

27.



Les droites AB, CD et EF sont concourantes et les mesures de certains angles sont indiquées sur la figure. L'angle $x°$ est égal à:

A 54

B 62

C 64

D 126

E 128

28. Si $x = 2$, l'expression $\frac{7x+4}{5x-4}$ est égale à:

A 11

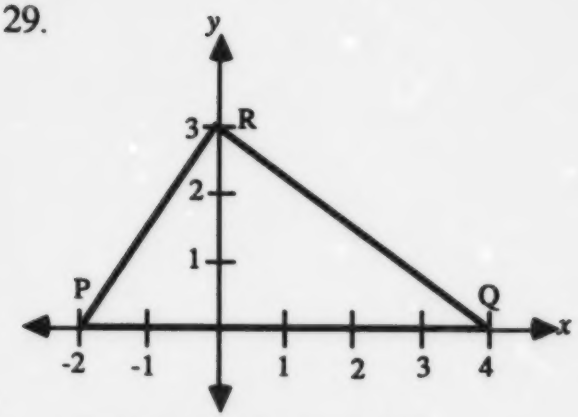
B 3

C $\frac{11}{5}$

D $\frac{9}{5}$

E $\frac{7}{5}$

29.



Quelle est l'aire du triangle PQR?

A 3 unités carrées

B 6 unités carrées

C 9 unités carrées

D 12 unités carrées

E 18 unités carrées

30. Quelle est la racine carrée de 12 x 75 ?

A 6,25

B 30

C 87

D 625

E 900

31. QRST est un carré et PQT un triangle équilatéral. Si la mesure de PQ = 6 cm, quelle est l'aire du carré?

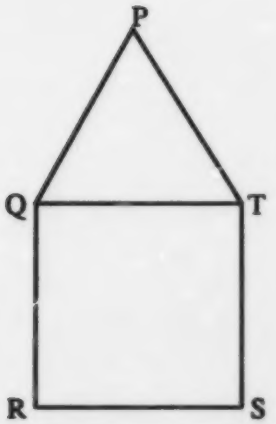
A 64 cm^2

B 48 cm^2

C 40 cm^2

D 36 cm^2

E 24 cm^2



32. Pierre et Paul décident de faire des économies. Chaque semaine Pierre peut économiser \$3 et Paul \$5. A ce rythme, en combien de semaines Paul aura-t-il exactement \$10 de plus que Pierre?

A 2

B 3

C 4

D 5

E 8

33. 0,00046 est égal à:

A 46×10^{-3}

B $4{,}6 \times 10^{-4}$

C $0{,}46 \times 10^{3}$

D $4{,}6 \times 10^{4}$

E 46×10^{5}

34. Un des points suivants peut être relié au point de coordonnées (-3, 4) par un segment qui NE coupe NI l'axe des x, NI l'axe des y. Lequel est ce point?

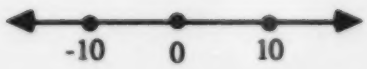
A (-2, 3)

B (2, -3)

C (2, 3)

D (-2, -3)

E (4, -3)

35. 

Trouvez parmi les suites de nombres suivantes, celle qui est dans l'ordre des nombres de la droite numérique:

A $0, \frac{1}{2}, -1$

B $0, -1, \frac{1}{2}$

C $-1, -\frac{1}{2}, 0$

D $-1, 0, -\frac{1}{2}$

E $-\frac{1}{2}, -1, 0$

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SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

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LIVRET 2LB

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(Rev. 86)

1. 72% est égal à:

A 7200

B 720

C 72

D 7,2

E 0,72

2. Parmi les nombres suivants, lequel est égal à 37 millièmes?

A 37 000

B 37

C 0,37

D 0,037

E 0,0037

3. Les pétales de 100 fleurs de différentes espèces sont soigneusement comptées et les résultats sont donnés dans ce tableau:

Nombre de pétales	Nombre de fleurs
10—12	5
13—15	22
16—18	48
19—21	18
22—24	7

Combien de fleurs ont MOINS de 19 pétales?

A 48

B 52

C 73

D 75

E 93

4. Dans un pays de 36 000 000 d'habitants il y a 7 000 000 de filles de moins de 21 ans. Si on représente la distribution de la population de ce pays par un diagramme circulaire, l'angle du secteur représentant les filles de moins de 21 ans aura pour mesure:

A 7°

B 20°

C 21°

D 70°

E 72°

5.

m	-1	1	2	4
n	-1	3	5	9

Une formule peut relier m et n dans le tableau ci-dessus. C'est:

A $n = m$

B $n = 3m$

C $n = -m^2 + 1$

D $n = m^2 + 1$

E $n = 2m + 1$

6. La droite m est un axe de symétrie de la figure ci-contre. La mesure de l'angle BCD est:

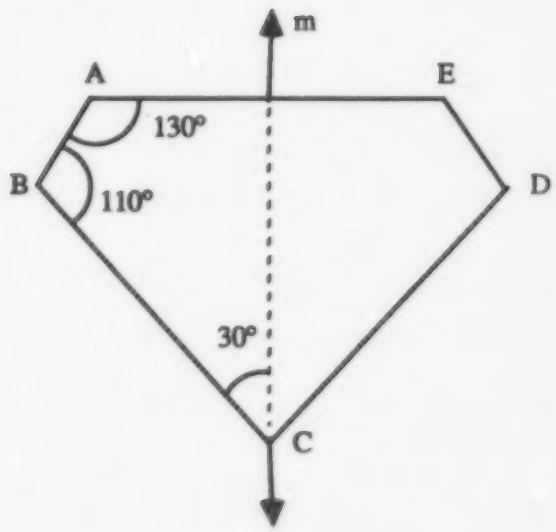
A 30°

B 50°

C 60°

D 70°

E 110°



7. Ginette est allée de Cyrville à Orléans dont la distance est de 3,1 km. Lors de sa promenade, elle a perdu sa montre et est revenue sur ses pas pendant 1,7 km pour la retrouver. Elle a repris ensuite sa route jusqu'à Orléans. Quelle est la distance que Ginette a parcourue en tout pour arriver à Orléans?

A 1,4 km

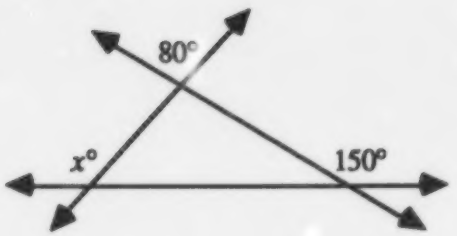
B 4,8 km

C 6,5 km

D 8,2 km

E Aucune de ces réponses

8.



Trois droites se coupent comme l'indique la figure ci-dessus. Quelle est la mesure de $x°$?

A 30°

B 50°

C 60°

D 110°

E 150°

9. Pour trois tests, les notes de Jean ont été de 78, 76 et 74, et les notes de Marie 72, 82 et 74. Compare les moyennes de Jean et de Marie.

A celle de Jean est supérieure d'un point

B celle de Jean est inférieure d'un point

C leurs moyennes sont égales

D celle de Jean est supérieure de 2 points

E celle de Jean est inférieure de 2 points

10. $\frac{3}{5} + \frac{2}{7}$ est égal à:

A $\frac{21}{10}$

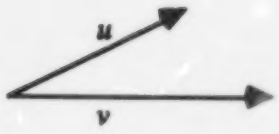
B $\frac{5}{12}$

C $\frac{10}{21}$

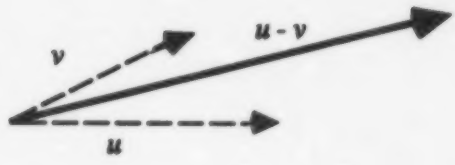
D $\frac{6}{35}$

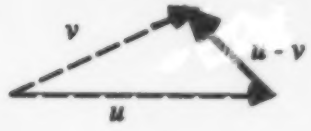
E $\frac{31}{35}$

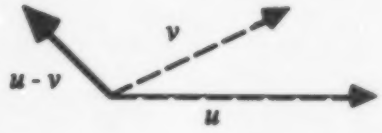
11.

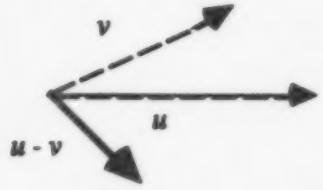


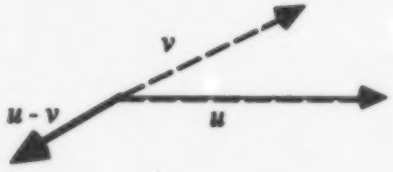
Si u et v sont deux vecteurs représentés par la figure ci-dessus, alors $u - v$ est représenté par:

A 

B 

C 

D 

E 

12. Si $6x - 3 = 15$

alors $6x = 15 - 3$	(1)
et $6x = 12$	(2)
et $x = \frac{12}{6}$	(3)
et $x = 2$	(4)

Si il y a une erreur dans le raisonnement ci-dessus, l'erreur paraît EN PREMIER à la ligne:

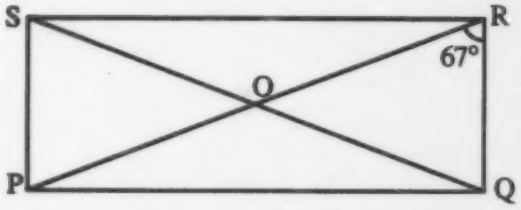
A (1)

B (2)

C (3)

D (4)

E Il n'y a pas d'erreur

13. 

Dans ce rectangle, la mesure de l'angle ROQ est:

A 23°

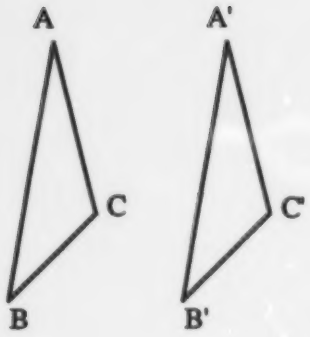
B 45°

C 46°

D 54°

E 67°

14.



Les triangles ABC et A'B'C' sont congrus et leurs côtés correspondants sont parallèles. Le triangle ABC est transformé en A'B'C' par:

A réflexion

B translation (glissement) suivie d'une réflexion

C rotation

D agrandissement

E translation (glissement)

16. $2^3 \times 3^2$ est égal à:

A 30

B 36

C 64

D 72

E Aucun de ces résultats

15. Parmi les trois opérations suivantes effectuées sur des nombres entiers, quelles sont celles qui donnent TOUJOURS un nombre entier comme résultat?

I Addition

II Multiplication

III Division

A I seulement

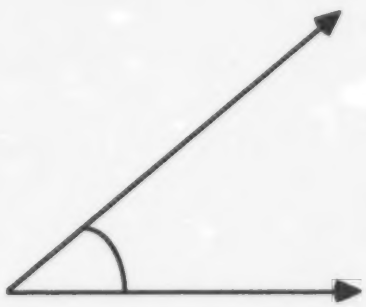
B II seulement

C III seulement

D I et II seulement

E II et III seulement

17.



Le nombre le plus proche de la mesure de cet angle est:

A 155°

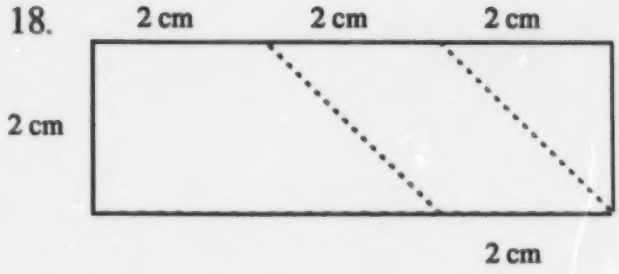
B 145°

C 50°

D 35°

E 15°

18.



Le rectangle ci-dessus est coupé le long des lignes pointillées et les trois morceaux sont mis ensemble, sans se recouvrir, pour donner la figure ci-dessous.

L'aire de cette figure, en centimètres carrés, est:

A 8 cm^2

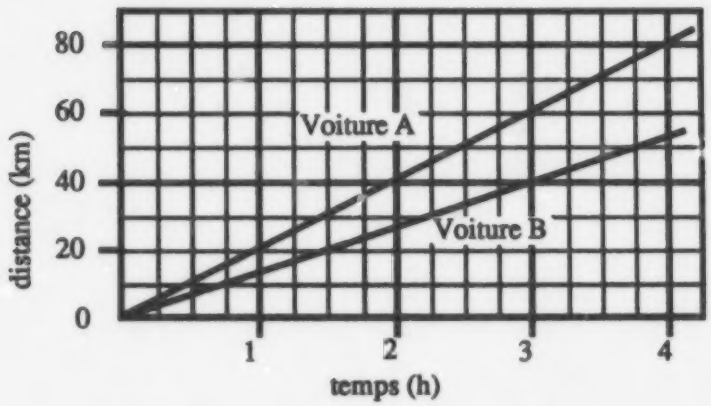
B 10 cm^2

C 12 cm^2

D 14 cm^2

E 16 cm^2

19.



Utilise le graphique ci-dessus pour répondre à la question suivante. Pour faire 50 km, combien de temps la voiture B met-elle de plus que la voiture A?

A 1 h 15 min

B 1 h 30 min

C 2 h

D 2 h 30 min

E 2 h 35 min

20. Lequel des nombres suivants est un nombre premier?

A 21

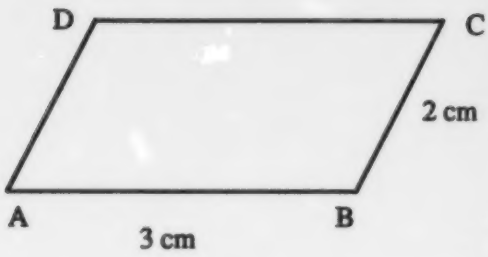
B 22

C 23

D 24

E 25

21.



Sur la figure ci-dessus, on a: AB//DC et AD//BC. Le quadrilatère ABCD est un:

A losange

B parallélogramme

C carré

D rectangle

E aucun de ceux-ci

22. Trouve la valeur de N.

$N = 10^3 + 10^1 + 10^0 + 10^{-2}$

A N = 0

B N = 20

C N = 1011,01

D N = 100

E Une autre valeur

23. Il y a 300 kJ dans 100 g d'une certaine nourriture. Combien y a-t-il de kilojoules dans 30 g de cette nourriture?

A 90 kJ

B 100 kJ

C 900 kJ

D 1000 kJ

E 9000 kJ

24. Simplifie: $5x + 3y + 2x - 4y$

A $7x + 7y$

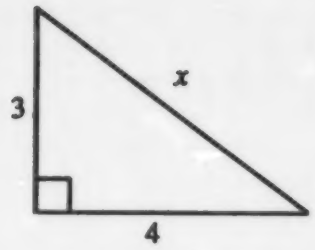
B $8x - 2y$

C $6xy$

D $7x - y$

E $7x + y$

25.



Parmi les équations suivantes, quelle est celle qui peut être écrite à partir du triangle ci-dessus?

A $x^2 = 3^2 + 4^2$

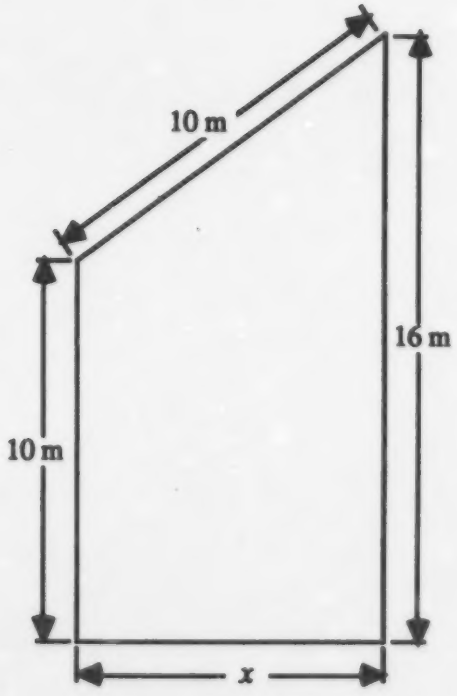
B $x^2 + 3^2 = 4^2$

C $x^2 = 4^2 - 3^2$

D $x^2 = 4^2 - 3^2$

E $x = 4 + 3$

26.



x est égal à:

A 4 m

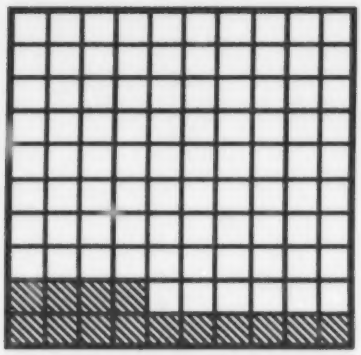
B 6 m

C 8 m

D 10 m

E 12 m

27.



L'aire du grand carré est de 1 unité de surface. Quelle est l'aire de la partie hachurée?

A 14 unités de surface

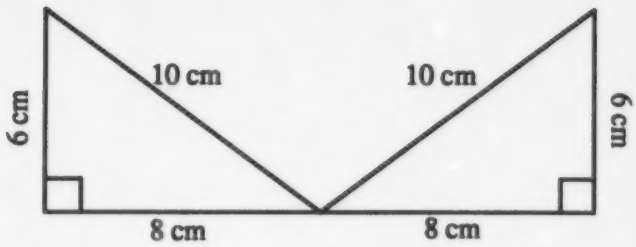
B 1,4 unité de surface

C 0,14 unité de surface

D 0,014 unité de surface

E 0,0014 unité de surface

28.



La somme des aires des deux triangles est:

A 6×8 cm^2

B $\frac{6 \times 8}{2}$ cm^2

C $\frac{10 \times 6}{2}$ cm^2

D $\frac{16 \times 12}{2}$ cm^2

E $\frac{20 \times 12}{2}$ cm^2

29. Si Y dollars sont également partagés entre quatre enfants, quelle est, en dollars, la part de chacun?

A $Y - 4$

B $\frac{4}{Y}$

C 4

D $\frac{Y}{4}$

E $4Y$

30. (-6) - (-8) est égal à:

A 14

B 2

C -2

D -10

E -14

31. On mesure la longueur d'une boîte et on trouve, en arrondissant AU CENTIMETRE LE PLUS PROCHE, 9 cm. Mesurée avec des moyens plus précis, quelle serait la longueur de cette boîte?

A 10 cm

B 9,9 cm

C 9,62 cm

D 9,6 cm

E 8,6 cm

32. Le dessin ci-contre montre comment Pierre utilise le petit arbre pour trouver la hauteur du grand. Quelle hauteur va-t-il trouver?

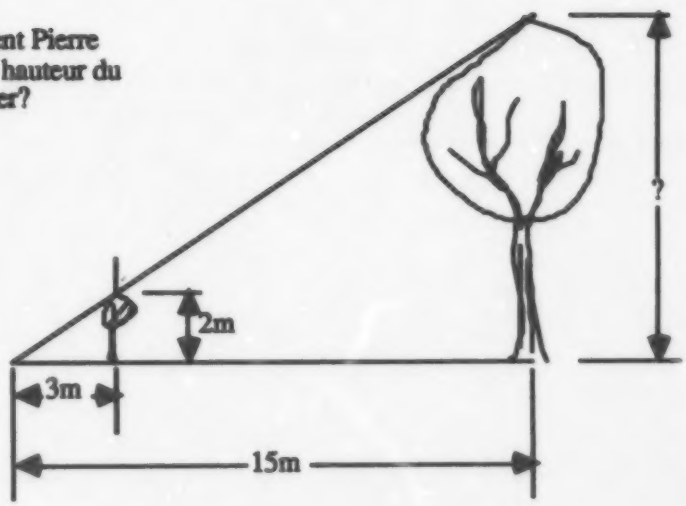
A 10 m

B 12 m

C 14 m

D 17 m

E 20 m



33. $\sqrt{75}$ est entre

A 4 et 5

B 5 et 6

C 6 et 7

D 7 et 8

E 8 et 9

34. (22 x 18) - (47 + 59) est égal à:

A 290

B 300

C 384

D 408

E 502

35. Il y a 35 élèves dans une classe; $\frac{1}{5}$ d'entre eux vont à l'école en autobus, $\frac{2}{5}$ y vont en bicyclette. Combien d'élèves vont à l'école par d'autres moyens?

A 7

B 14

C 21

D 28

E 35

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LIVRET 2LC

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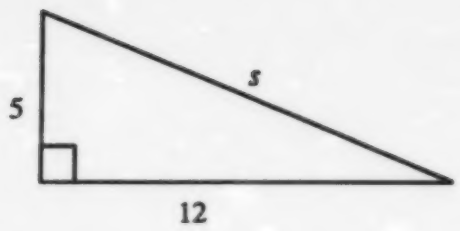
(Rev. 86)

1.



s est égal à:

A 7

B 13

C 15

D 17

E Aucune des ces réponses

2. Parmi les nombres suivants, quel est celui qui se rapproche le plus de la masse d'un homme normal?

A 8,5 kg

B 85 kg

C 185 kg

D 850 kg

E 1850 kg

3. Quelle est la paire de fractions égales?

A $\frac{5}{8}$ et $\frac{2}{3}$

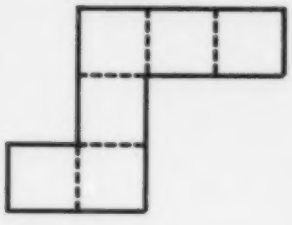
B $\frac{5}{6}$ et $\frac{2}{3}$

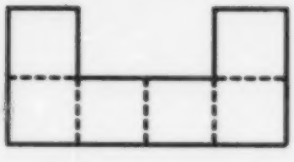
C $\frac{4}{5}$ et $\frac{14}{15}$

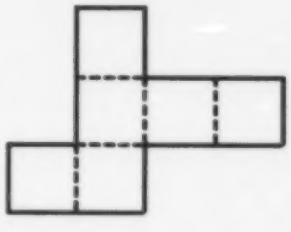
D $\frac{3}{5}$ et $\frac{9}{15}$

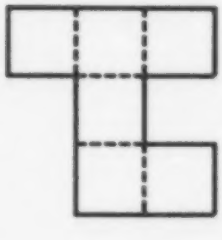
E $\frac{1}{2}$ et $\frac{14}{24}$

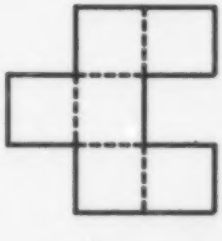
4. Parmi les formes suivantes, laquelle peut être utilisée pour fabriquer un cube, en pliant suivant les pointillés?

A 

B 

C 

D 

E 

5. $1\frac{2}{5} - \frac{1}{2}$ est égal à:

A $\frac{2}{3}$

B $\frac{9}{10}$

C $1\frac{1}{10}$

D $1\frac{1}{7}$

E $1\frac{1}{3}$

6. Il y a 5 boutons noirs et un bouton rouge dans une urne. Si tu piges un bouton au hasard, quelle est la probabilité de piger le bouton rouge?

A 0

B $\frac{1}{6}$

C $\frac{1}{5}$

D $\frac{5}{6}$

E 1

7. Tu veux connaître la popularité d'une boisson gazeuse SPLASH dans ton école. La meilleure façon de s'y prendre pour que tu sois pratiquement sûr de tes résultats est de:

A Compter le nombre de bouteilles vides de SPLASH dans les poubelles

B Demander au responsable combien de caisses de SPLASH il a commandé le mois précédent

C Demander à tes amis s'ils pensent que SPLASH est la boisson qui est la plus appréciée

D Demander au livreur de boissons gazeuses ce qu'il pense de SPLASH

E Remplir un tableau des ventes des différentes marques de boisson gazeuse dans l'école au cours d'une semaine

8. Un groupe d'enfants a été divisé en 7 équipes comprenant chacune neuf enfants. Par la suite, le même groupe a été divisé en équipes de sept enfants chacune. Combien d'équipes de sept ont donc été formées?

A 7

B 8

C 9

D 16

E 63

9. Si deux triangles sont SEMBLABLES, quelle proposition est toujours vraie?

A Leurs angles correspondants doivent être égaux

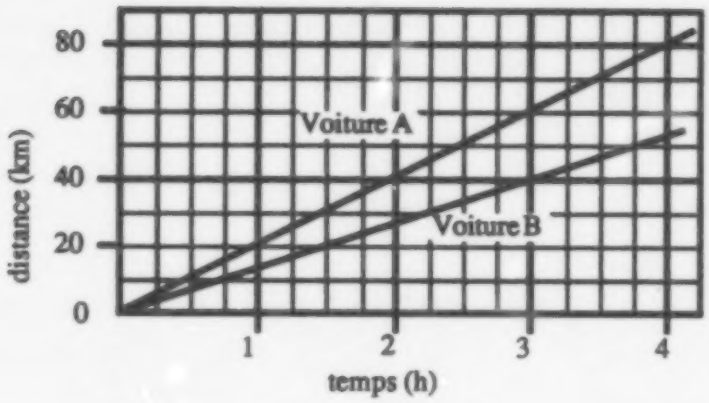
B Leurs côtés correspondants doivent être égaux

C Leur côtés correspondants doivent être parallèles

D Ils doivent avoir la même aire

E Ils doivent avoir la même forme et la même taille

10.



Utilise le graphique ci-dessus pour répondre à la question suivante:

3 heures après le départ, de combien de kilomètres la voiture A devance-t-elle la voiture B?

A 2

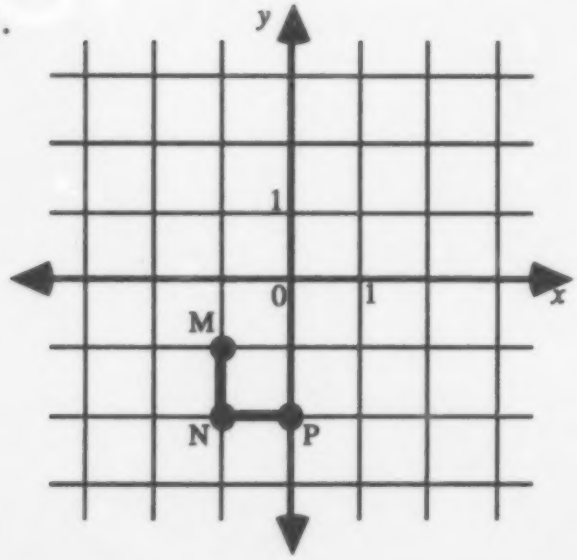
B 10

C 15

D 20

E 25

11.



Partant du point M(-1, -1), on fait un pas pour se rendre au point N(-1, -2), ensuite on tourne à gauche et on fait un pas pour arriver au point P(0, -2). Si on tourne encore à gauche et on fait un pas on arrive au point de coordonnées:

A (1, -2)

B (0, -3)

C (0, -1)

D (-1, -2)

E Aucun de ces points

12. Le prix d'impression de cartes de voeux comprend un prix fixe de 100 cents puis un supplément de 6 cents pour chaque carte imprimée. Laquelle des équations suivantes peut-on utiliser pour le calcul du prix de n cartes?

A prix = $(100 + 6n)$ cents

B prix = $(106 + n)$ cents

C prix = $(6 + 100n)$ cents

D prix = $(106n)$ cents

E prix = $(600n)$ cents

13. "Six fois un certain nombre (appelons le q) est égal à la somme de 8 et du double de ce nombre". Ceci peut s'écrire:

A $6q = 2(8 + q)$

B $6(q + 8) = 2q$

C $6(q + 8) = 8 + 2q$

D $6q = 8 + 2q$

E $q = 1$

14. Dans une élection, le candidat A a obtenu 70% des voix. Sachant que 4200 personnes ont voté lors de cette élection, combien de voix a-t-il obtenues?

A 2800

B 2900

C 2940

D 3000

E 4130

15. Quel est le volume d'un récipient cubique de 10 cm de côté:

A 1 L

B 10 L

C 100 L

D 1000 L

E 1000 cm

16. Si $x = y = z = 1$ alors $\frac{x - z}{x + y}$ est égal à:

A -2

B -1

C 0

D $\frac{1}{2}$

E 1

17. Michel a un grand nombre de cubes de 1 cm de côté. Quel est le nombre maximum de cubes que Michel peut mettre dans une boîte rectanlugaire dont les dimensions sont: 10 cm de long, 10 cm de large et 7 cm de haut?

A 27

B 70

C 140

D 280

E 700

18. Si le rapport de 2 à 5 est égal au rapport de n à 100, alors n est égal à:

A 10

B 20

C 40

D 150

E 250

19. Une cloche sonne toutes les 8 minutes; une autre cloche sonne toutes les 12 minutes. Elles sonnent ensemble à midi. Au bout de combien de minutes sonneront-elles à nouveau ensemble pour la première fois?

A 8

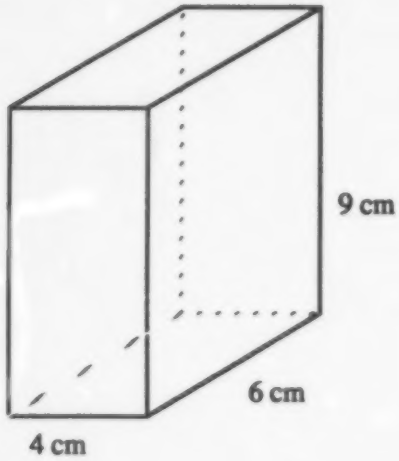
B 12

C 20

D 24

E 96

20. L'AIRE DE LA SURFACE de cette boîte rectangulaire est:



A $50\ cm^2$

B $100\ cm^2$

C $114\ cm^2$

D $216\ cm^2$

E $228\ cm^2$

21. $3{,}23 \times 10^5$ est égal à:

A 0,000 032 3

B 3,230 00

C 32 300

D 323 000

E 32 300 000

22. La vitesse du son est d'environ 340 m/s. Combien de temps faut-il pour entendre le son du klaxon d'une automobile qui est à 714 m de là?

A 0,21 s

B 2,1 s

C 21 s

D 210 s

E Aucune de ces réponses

23. Un quadrilatère DOIT être un parallélogramme, s'il a:

A deux côtés adjacents de longueurs égales

B une paire de côtés parallèles

C une diagonale comme axe de symétrie

D deux angles adjacents égaux

E deux paires de côtés parallèles

24. Parmi les égalités suivantes, quelle est celle qui est FAUSSE lorsque a, b et c sont des nombres réels différents?

A $(a + b) + c = a + (b + c)$

B $ab = ba$

C $a + b = b + a$

D $(ab)c = a(bc)$

E $a - b = b - a$

25. Si le nombre 74,236 est arrondi au centième le plus proche, quelle valeur obtient-on?

A 74,2

B 74,3

C 74,23

D 74,24

E 74,240

26. Une boule de quilles parcourt 4 m/s. La distance parcourue en t secondes est donnée par $d = 4t$. Dans ce tableau, x est égal à:

t	d
0	0
1	4
2	8
3	x
4	16

A 6

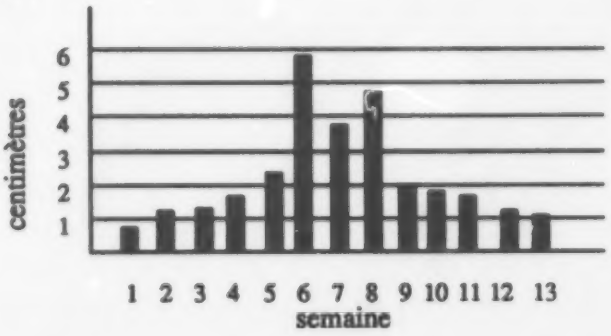
B 10

C 12

D 14

E Aucune des réponses précédentes

27.



Sur ce graphique, la hauteur de pluie en centimètres est relevée pendant 13 semaines. La hauteur moyenne de pluie tombée par semaine durant cette période est d'environ:

A 1 cm

B 2 cm

C 3 cm

D 4 cm

E 5 cm

28. 162 x 45 est égal à:

A 1378

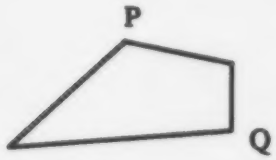
B 1458

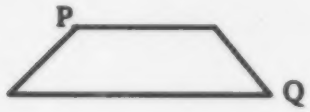
C 5890

D 6290

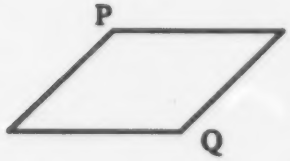
E 7290

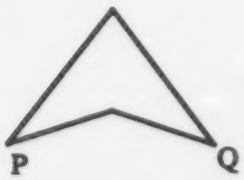
29. Si l'on dessine le segment $\overline{PQ}$ sur chacune des figures ci-dessous, l'une d'elles sera partagée en deux triangles congruents. Laquelle?

A 

B 

C

D 

E 

30. La moyenne de:
1,50
2,40
3,75
est égale à:

A 2,40

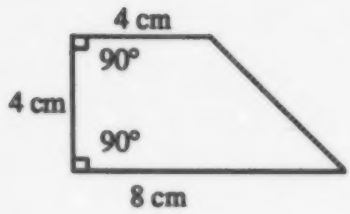
B 2,55

C 3,75

D 7,65

E Aucune de ces réponses

31.



La figure montre la forme et les dimensions d'une plaque de laiton. Quelle est son aire en centimètres carrés?

A 16

B 24

C 32

D 64

E 96

33. Si $4 \times 9 = 36$, $\sqrt{36}$ est égal à:

A 4×9

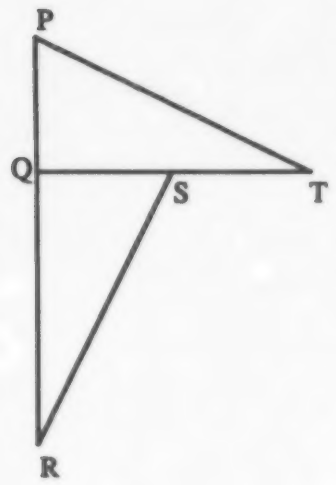
B 4×3

C 2×9

D 2×3

E $\sqrt{2} \times \sqrt{3}$

32.



On peut, par rotation, transformer le triangle PQT en SQR. Le centre de rotation est:

A le point P

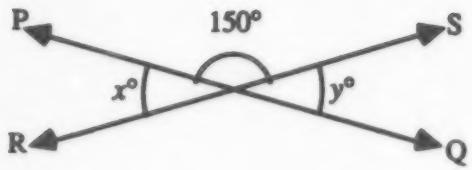
B le point Q

C le point R

D le point S

E le point T

34.



Sur cette figure, les droites PQ et RS se croisent. $x + y$ est égal à:

A 15

B 30

C 60

D 180

E 300

35. $\frac{a}{15} - \frac{b}{5}$ est égal à:

A $\frac{a - 3b}{15}$

B $\frac{5a - 15b}{15}$

C $\frac{a - b}{10}$

D $\frac{a - b}{75}$

E Aucun de ces nombres

Association internationale pour
l'évaluation du rendement scolaire

SECONDE ENQUETE INTERNATIONALE SUR L'ENSEIGNEMENT DES MATHEMATIQUES

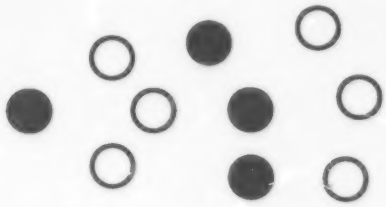
HUITIEME ANNEE
QUESTIONNAIRE - DE MATHEMATIQUE

LIVRET 2LD

Institut d'études
pédagogiques de l'Ontario

(Rev. 86)

1. Le diagramme ci-dessous montre un certain nombre de billes noires et de billes blanches. Quelle fraction de toutes ces billes sont blanches?



A $\frac{1}{2}$

B $\frac{6}{4}$

C $\frac{4}{6}$

D $\frac{6}{10}$

E $\frac{4}{10}$

2. Quel est le volume d'une boîte rectangulaire dont les dimensions sont 10 cm de long, 10 cm de large et 7 cm de haut?

A 27 cm^3

B 70 cm^3

C 140 cm^3

D 280 cm^3

E 700 cm^3

3. Un coureur parcourt 3000 m en 8 minutes exactement. Quelle est sa vitesse moyenne en mètres par seconde?

A 3,75

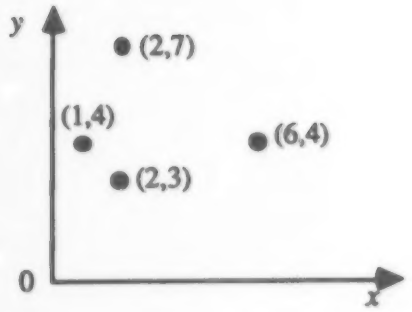
B 6,25

C 16,0

D 37,5

E 62,5

4.



La droite joignant les points de coordonnées (2, 3) et (2, 7) coupe la droite joignant les points de cordonnées (1, 4) et (6, 4) au point de coordonnées:

A (4, 2)

B (1, 4)

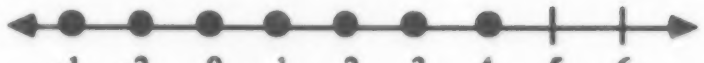
C (1, 3)

D (2, 3)

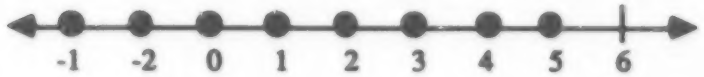
E (2, 4)

5. Dans l'une des droites numériques ci-dessous, les points noirs représentent l'ensemble des nombres entiers strictement inférieurs à 5. Laquelle?

A

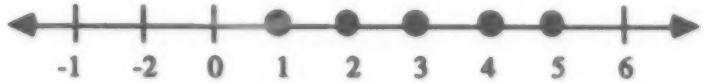


B



C

D



E

6. Quelles sont les égalités vraies parmi les trois suivantes?

I $(53 \times 73) \times 17 = 53 \times (73 \times 17)$

II $133 \times (78 + 89) = (133 \times 78) + 89$

III $133 \times (78 + 89) = (133 \times 78) + (133 \times 89)$

A I seulement

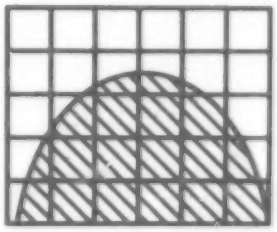
B II seulement

C III seulement

D I et II seulement

E I et III seulement

7.



Chacun des petits carrés de la figure mesure 1 unité carrée. Quelle est la meilleure estimation de la partie hachurée?

A 10 unités carrées

B 12 unités carrées

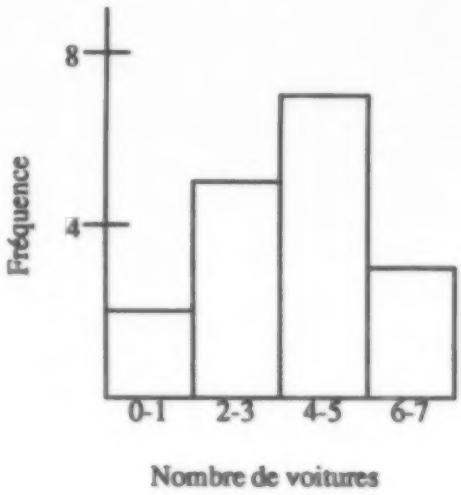
C 14 unités carrées

D 16 unités carrées

E 18 unités carrées

8. Le tableau et le graphique ont été établis avec les mêmes données

Nombre de voitures	Fréquence
0 ou 1	2
2 ou 3	x
4 ou 5	7
6 ou 7	3



x est égal à:

A 2

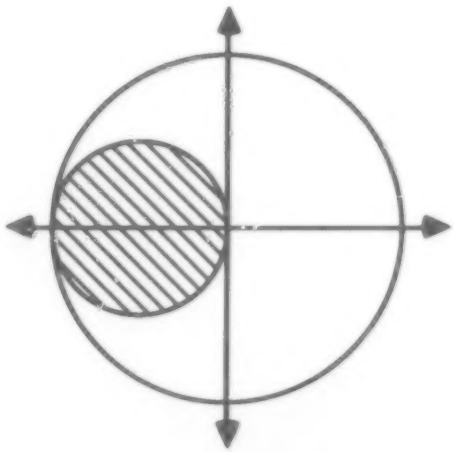
B 3

C 4

D 5

E 6

9. A quelle fraction de l'aire du grand cercle, l'aire du cercle hachuré est-elle égale?



A $\frac{1}{6}$

B $\frac{1}{5}$

C $\frac{1}{4}$

D $\frac{1}{3}$

E $\frac{1}{2}$

10. Trouve la somme:

3 semaines et 5 jours
+ 9 semaines et 6 jours

A 12 semaines et 1 jour

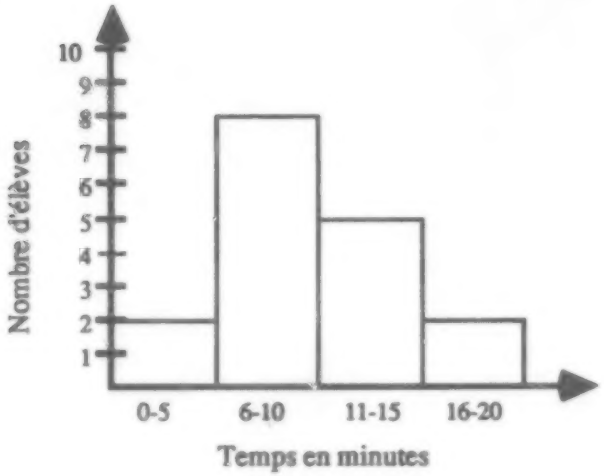
B 12 semaines et 4 jours

C 13 semaines et 1 jour

D 13 semaines et 4 jours

E 13 semaines et 11 jours

11.



Ce graphique indique la durée du transport des élèves entre la maison et l'école. Combien d'élèves ont un transport d'une durée de PLUS de 10 minutes?

A 2

B 5

C 7

D 8

E 15

12. Dans les trois figures ci-dessous, des allumettes sont disposées ainsi:

Si on continue de la même façon, combien d'allumettes faudra-t-il pour faire la 10ième figure?

A 30

B 33

C 36

D 39

E 42

13. $\begin{array}{r} 1054 \\ \underline{-\ 865} \end{array}$

A 189

B 199

C 211

D 289

E 299

14. Dans une école, il y a 3 candidats à une élection. Jean a recueilli 120 voix, Marie 50 voix et Georges 30 voix. Quel pourcentage du nombre total de voix Jean a-t-il recueilli?

A $\frac{6}{10}$ %

B 40 %

C 60 %

D 80 %

E 120 %

15. Sur un sol bien plat, un enfant haut de 5 unités projette une ombre longue de 3 unités. Au même moment, un poteau télégraphique tout proche qui est haut de 45 unités projette une ombre qui a pour longueur:

A 24 unités

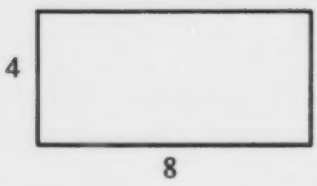
B 27 unités

C 30 unités

D 60 unités

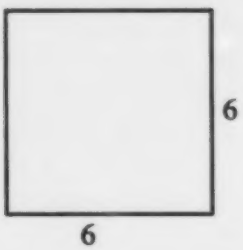
E 75 unités

16.

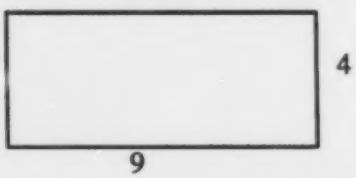


L'une des 5 figures ci-dessous est congruente à la figure ci-dessus. Laquelle?

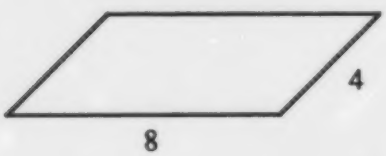
A



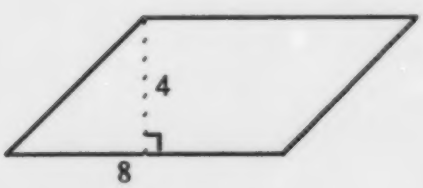
B



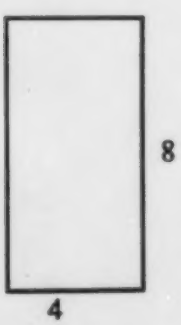
C



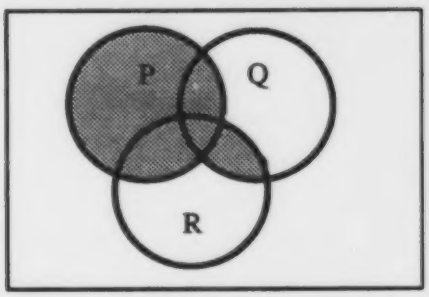
D



E



17. On note $P \cap Q$ l'intersection des ensembles P et Q, et $P \cup Q$ l'union des ensembles P et Q. Sur le dessin, la partie hachurée représente:



A $(P \cap Q) \cup R$

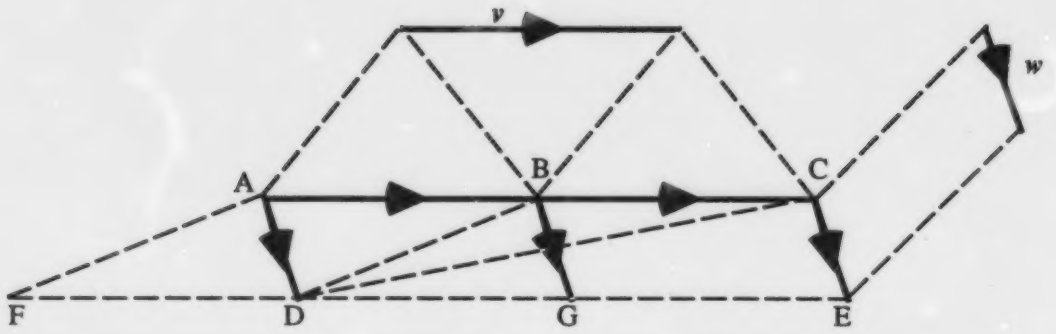
B $P \cup (Q \cap R)$

C $P \cap (Q \cup R)$

D $(P \cap Q) \cap R$

E $(P \cup Q) \cap R$

18.



Etant donnés les vecteurs v et w tels qu'illustrés ci-dessus, à quoi est égal DB, le vecteur de D à B?

A $v + w$

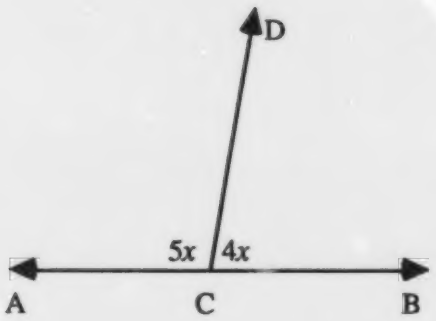
B $v - w$

C $w - v$

D $-w - v$

E $v + 2w$

19.



Si AB est une droite, quelle est la mesure en degrés de l'angle BCD?

A 20

B 40

C 50

D 80

E 100

20. Quelle est l'égalité vraie pour n'importe quelle valeur de n ?

A $2 + n = n + 2$

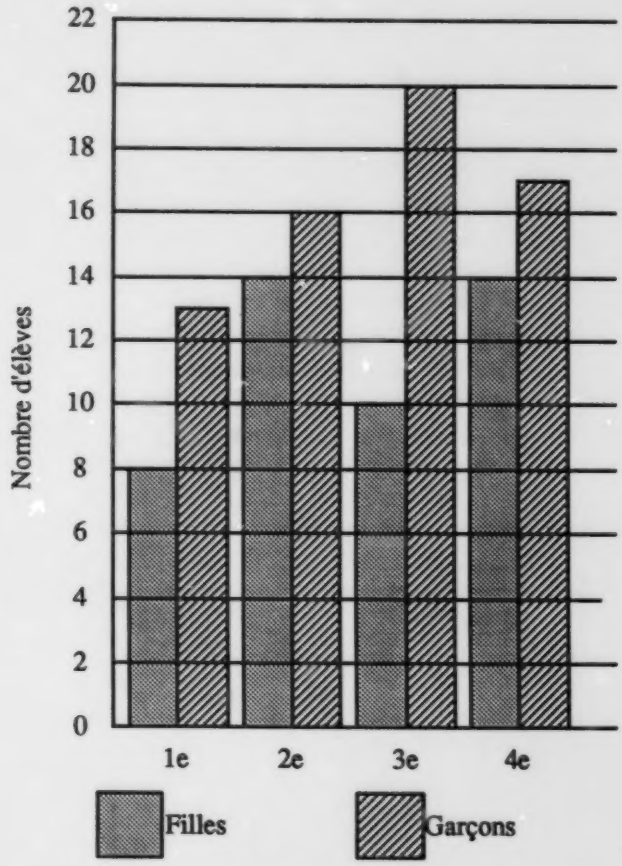
B $3 + n = 4 + 2$

C $n + 1 = 1$

D $2n + 1 = n$

E $n + 3 = 3n$

21. Elèves dans les classes de: 1e, 2e, 3e, et 4e années.



A partir des informations du graphique, quelle est la proposition VRAIE?

A La classe de 2e est la moins nombreuse.

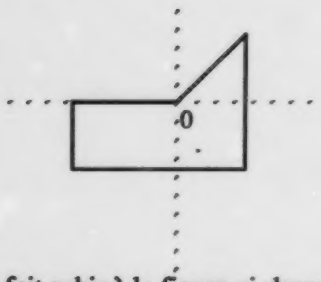
B Les classes de 2e et 4e ont le même nombre d'élèves.

C En 3e, il y a deux fois plus de garçons que de filles.

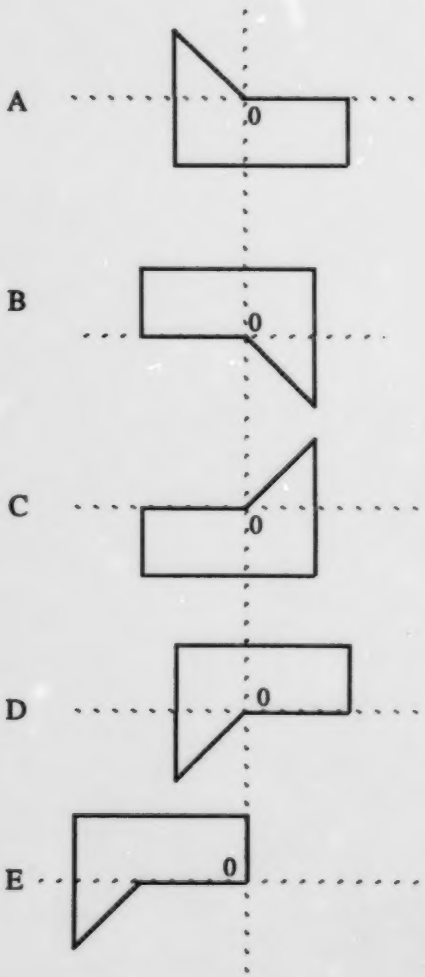
D En 4e, il y a plus de filles que de garçons.

E Il y a autant de garçons en 1e que de filles en 4e.

22.



On fait subir à la figure ci-dessus une rotation de 180° (demi-tour) autour du point 0. Laquelle des figures suivantes est le resultat?



23. Combien de tuyaux de 20 m faut-il utiliser pour construire une conduite de 1 kilomètre de long?

A 5

B 50

C 500

D 5000

E 50 000

24. Dans un quadrilatère, deux des angles mesurent 110° chacun et un troisième mesure 90°. Quelle est la mesure du quatrième angle?

A 50°

B 90°

C 130°

D 140°

E Aucune de ces réponses

25. $\frac{1}{2} \times \frac{1}{4}$ est égal à:

A $\frac{1}{8}$

B $\frac{1}{6}$

C $\frac{2}{8}$

D $\frac{2}{4}$

E 8

26. $\frac{x}{2} < 7$ est équivalent à:

A $x < \frac{7}{2}$

B $x < 5$

C $x < 14$

D $x > 5$

E $x > 14$

27. Une eau gazeuse coûte a cents la bouteille y compris le dépot; on remet b cents pour chaque bouteille vide rapportée. Combien Henri devra-t-il payer s'il achète x bouteilles et s'il en rapporte y vides?

A $ax + by$ cents

B $ax - by$ cents

C $(a - b)\,x$ cents

D $(a + x) - (b + y)$ cents

E Aucune de ces réponses

28. $7 \times (3 + 9)$ est égal à:

A $(7 \times 3) + (7 \times 9)$

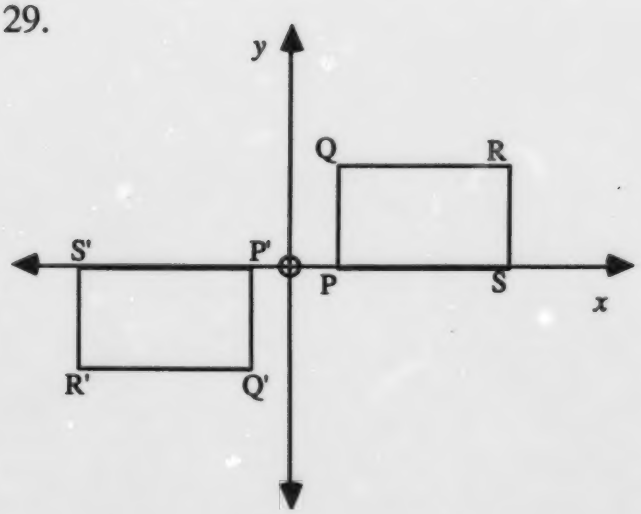
B $(7 \times 9) + (3 \times 9)$

C $(7 \times 3) + (3 \times 9)$

D 7×27

E $21 + 9$

29.



Sur le dessin, PQRS est un rectangle, et son image par une transformation est le rectangle P'Q'R'S'. Cette transformation est:

A une rotation autour de l'origine

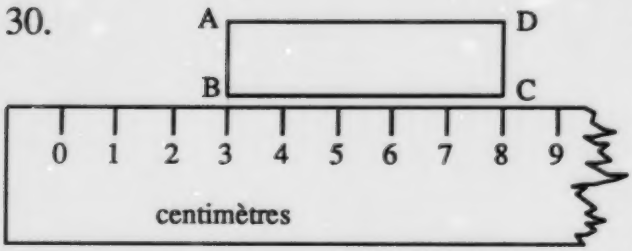
B réflexion par rapport à l'axe des y

C une translation (un glissement) parallèle à l'axe des x

D une réflexion par rapport à l'axe des x

E une translation (un glissement) parallèle à l'axe des y

30.



Sur ce dessin, la mesure du côté BC du rectangle ABCD est (au centimètre le plus proche):

A 5 cm

B 6 cm

C 7 cm

D 8 cm

E 9 cm

31. -5 (6 - 4) est égal à:

A 50

B 26

C 10

D -10

E -26

32. La somme de $150 est divisée en 2 parts, dans un rapport de 2 à 3. Quel est le montant de la plus petite de ces parts?

A $30

B $50

C $60

D $90

E $120

33. 847,36

Dans le nombre encadré ci-dessus le 6 représente:

A $6 \times \frac{1}{100}$

B $6 \times \frac{1}{10}$

C 6×1

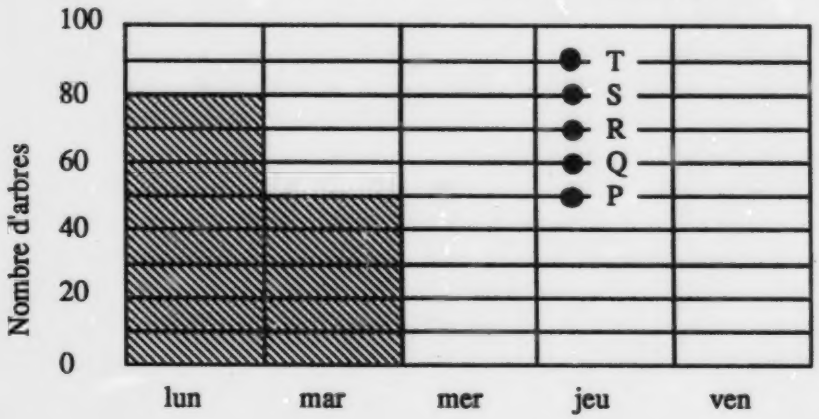
D 6×10

E 6×100

34. Ce tableau indique le nombre d'arbres plantés le long d'une autoroute pendant une semaine.

jours de la semaine	lun	mar	mer	jeu	ven
Nombres d'arbres plantés	80	50	60	90	75

Le graphique ci-dessous indique le nombre d'arbres plantés les deux premiers jours.



Si on complète le graphique, quel est le point qui indique le sommet de la bande pour le jeudi?

A le point P

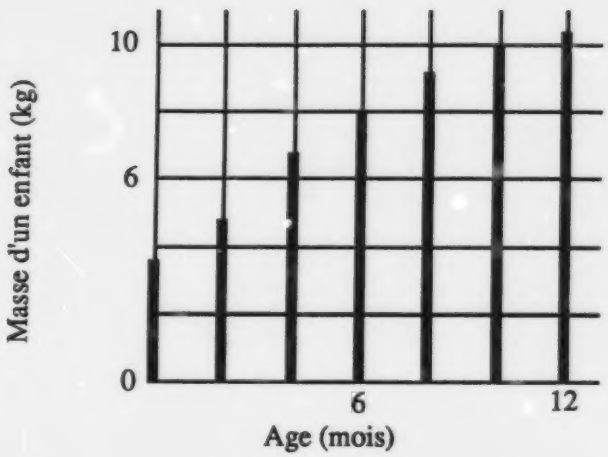
B le point Q

C le point R

D le point S

E le point T

35.



Le gain de masse d'un enfant entre 6 et 10 mois est de:

A 1 kg

B 2 kg

C 4 kg

D 6 kg

E 8 kg

Appendix II

Detailed item analysis of the performance of the enlarged francophone sample on the revised French items. For each item the following data appear:

Hungarian number = International ID and sequence number.
abbreviated text = Up to first 60 characters of item stem.
Key (1-5 for A-E) = Indicates which of 5 distractors is correct response.
Grid = International curriculum topic & sub-topic, coded as follows:

000 ARITHMETIC
001 WHOLE NUMBERS
002 COMMON FRACTIONS
003 DECIMAL FRACTIONS
004 RATIO, PROPORTION, PERCENT
005 NUMBER THEORY
006 POWERS
008 SQUARE ROOTS
009 DIMENSIONAL ANALYSIS
100 ALGEBRA
101 INTEGERS
102 RATIONALS
103 INTEGER EXPONENTS
104 FORMULAS
105 POLYNOMIALS EXPRESSIONS
106 EQUATIONS AND INEQUATIONS
107 RELATIONS
110 FINITE SETS
200 GEOMETRY
201 CLASSIFICATION
202 PROPERTIES
203 CONGRUENCE
204 SIMILARITY
205 GEOMETRIC CONSTRUCTIONS
206 PYTHAGOREAN
207 COORDINATES
208 DEDUCTIONS
209 TRANSFORMATION (INFORMAL)
212 SPATIAL VISUALIZATION
215 TRANSFORMATIONAL GEOMETRY
300 PROBABILITY AND STATISTICS
301 COLLECTION
302 ORGANIZATION
303 REPRESENTATION
304 MEAN, MEDIAN, MODE
306 PROBABILITY
400 MEASUREMENT
401 UNITS
402 ESTIMATION
403 APPROXIMATION
404 DETERMINING MEASURES

Form (0=Core Form Booklet 3L; 1-4 = Rotated Forms Booklets 2LA-2LD)
Position within form = Item number within form.
Difficulty = Percentage of students choosing correct response.
Sample size = Number of students responding to item.
Response percentages for each distractor A to E and OMIT.

The output is ordered by Form and position.

Item stats ordered by Form and Position

100
2 METERS + 3 MILLIMETERS IS EQUAL TO
Key=2 Grid=401 Form=0 Position= 1
Difficulty= 48.0 Sample= 408.
A= 12.7 B= 48.0 C= 15.9 D= 11.0 E= 11.0 OMIT= 1.2

189
1/5 IS EQUAL TO
Key=4 Grid= 4 Form=0 Position= 2
Difficulty= 48.0 Sample= 408.
A= 14.2 B= 8.1 C= 23.8 D= 48.0 E= 5.4 OMIT= 0.5

151
IF 5X + 4 = 4X - 31, THEN X IS EQUAL TO
Key=1 Grid=106 Form=0 Position= 3
Difficulty= 15.2 Sample= 408.
A= 15.2 B= 26.0 C= 23.8 D= 15.4 E= 7.1 OMIT= 12.5

76
FOUR 1-LITER BOWLS OF ICE CREAM WERE SET OUT AT A PARTY.
Key=5 Grid= 2 Form=0 Position= 4
Difficulty= 25.2 Sample= 408.
A= 6.6 B= 39.0 C= 4.7 D= 23.3 E= 25.2 OMIT= 1.2

165
WHICH OF THE FOLLOWING IS THE CLOSEST APPROX. TO THE AREA OF
Key=4 Grid=403 Form=0 Position= 5
Difficulty= 40.2 Sample= 408.
A= 29.4 B= 9.6 C= 10.8 D= 40.2 E= 7.1 OMIT= 2.9

167
THE AREA OF THE SHADED FIGURE, TO THE NEAREST SQUARE UNIT, IS
Key=4 Grid=402 Form=0 Position= 6
Difficulty= 60.5 Sample= 408.
A= 10.3 B= 5.4 C= 11.3 D= 60.5 E= 11.5 OMIT= 1.0

31
THE DIAGRAM SHOWS A CARDBOARD CUBE WHICH HAS BEEN CUT ALONG
Key=4 Grid=212 Form=0 Position= 7
Difficulty= 66.2 Sample= 408.
A= 7.4 B= 11.8 C= 8.6 D= 66.2 E= 4.4 OMIT= 1.7

69
THE LENGTH OF AB IS 1 UNIT. WHICH IS THE BEST ESTIMATE FOR
Key=2 Grid=402 Form=0 Position= 8
Difficulty= 93.1 Sample= 408.
A= 1.0 B= 93.1 C= 3.7 D= 0.7 E= 1.0 OMIT= 0.5

38
ON THE ABOVE SCALE THE READING INDICATED BY THE ARROW IS
Key=5 Grid=402 Form=0 Position= 9
Difficulty= 43.9 Sample= 408.
A= 1.5 B= 40.7 C= 2.0 D= 12.0 E= 43.9 OMIT= 0.0

168
A SOLID PLASTIC CUBE WITH EDGES 1 CM LONG WEIGHS 1 GRAM.
Key=1 Grid=404 Form=0 Position=10
Difficulty= 4.4 Sample= 408.
A= 4.4 B= 11.0 C= 3.7 D= 79.7 E= 1.0 OMIT= 0.2

175

ON A NUMBER LINE TWO POINTS A AND B ARE GIVEN. THE COORDINATE

Key=5 Grid=207 Form=0 Position=11

Difficulty= 29.7 Sample= 408.

A= 8.6 B= 8.3 C= 33.1 D= 14.0 E= 29.7 OMIT= 6.4

79

A PAINTER IS TO MIX GREEN AND YELLOW PAINT IN THE RATIO OF

Key=4 Grid= 4 Form=0 Position=12

Difficulty= 40.4 Sample= 408.

A= 12.5 B= 24.5 C= 16.2 D= 40.4 E= 4.7 OMIT= 1.7

17

IF P = LW AND IF P = 12 AND L = 3, THEN W IS EQUAL TO

Key=3 Grid=106 Form=0 Position=13

Difficulty= 60.8 Sample= 408.

A= 9.3 B= 5.4 C= 60.8 D= 7.6 E= 13.7 OMIT= 3.2

181

A MODEL BOAT IS BUILD TO SCALE SO THAT IT IS 1/10 AS LONG AS

Key=2 Grid= 4 Form=0 Position=14

Difficulty= 56.4 Sample= 408.

A= 11.3 B= 56.4 C= 11.3 D= 5.6 E= 11.8 OMIT= 3.7

45

THE VALUE OF 0.2131 * 0.02958 IS APPROXIMATELY

Key=3 Grid= 3 Form=0 Position=15

Difficulty= 34.3 Sample= 408.

A= 9.1 B= 7.1 C= 34.3 D= 10.0 E= 37.7 OMIT= 1.7

12

(-2) * (-3) IS EQUAL TO

Key=5 Grid=101 Form=0 Position=16

Difficulty= 36.5 Sample= 408.

A= 51.0 B= 7.4 C= 2.9 D= 1.7 E= 36.5 OMIT= 0.5

121

WHICH OF THE INDICATED ANGLES IS ACUTE?

Key=1 Grid=201 Form=0 Position=17

Difficulty= 70.1 Sample= 408.

A= 70.1 B= 13.0 C= 8.8 D= 4.7 E= 2.7 OMIT= 0.7

86

IF 4X/12 = 0, THEN X IS EQUAL TO

Key=1 Grid=106 Form=0 Position=18

Difficulty= 48.0 Sample= 408.

A= 48.0 B= 35.0 C= 7.1 D= 5.4 E= 0.7 OMIT= 3.7

23

THE LENGTH OF THE CIRCUMFERENCE OF THE CIRCLE WITH CENTER AT

Key=4 Grid=202 Form=0 Position=19

Difficulty= 31.6 Sample= 408.

A= 22.5 B= 13.7 C= 24.3 D= 31.6 E= 3.9 OMIT= 3.9

109

IN A DISCUS-THROWING COMPETITION, THE WINNING THROW WAS 61.60

Key=2 Grid= 3 Form=0 Position=20

Difficulty= 77.7 Sample= 408.

A= 2.9 B= 77.7 C= 4.4 D= 10.8 E= 3.4 OMIT= 0.7

127
IN THE ABOVE DIAGRAM, TRIANGLES ABC AND DEF ARE CONGRUENT,
Key=4 Grid=208 Form=0 Position=21
Difficulty= 45.1 Sample= 408.
A= 9.6 B= 16.9 C= 14.5 D= 45.1 E= 11.5 OMIT= 2.5

122
(TRIANGLE WITH 2 ANGLES GIVEN) X IS EQUAL TO
Key=5 Grid=202 Form=0 Position=22
Difficulty= 77.0 Sample= 408.
A= 5.1 B= 4.4 C= 5.6 D= 6.4 E= 77.0 OMIT= 1.5

103
A SQUARE IS REMOVED FROM THE RECTANGLE AS SHOWN. WHAT IS THE
Key=3 Grid=404 Form=0 Position=23
Difficulty= 30.4 Sample= 408.
A= 4.2 B= 12.7 C= 30.4 D= 13.7 E= 36.0 OMIT= 2.9

190
CLOTH IS SOLD BY THE SQUARE METER. IF 6 SQUARE METERS OF
Key=1 Grid= 4 Form=0 Position=24
Difficulty= 46.3 Sample= 408.
A= 46.3 B= 19.9 C= 15.2 D= 13.5 E= 3.2 OMIT= 2.0

13
THE AIR TEMPERATURE AT THE FOOT OF A MOUNTAN IS 31 DEGREES.
Key=5 Grid=101 Form=0 Position=25
Difficulty= 43.4 Sample= 408.
A= 7.8 B= 12.7 C= 2.2 D= 32.6 E= 43.4 OMIT= 1.2

5
0.40 * 6.38 IS EQUAL TO
Key=3 Grid= 3 Form=0 Position=26
Difficulty= 55.6 Sample= 408.
A= 17.9 B= 5.9 C= 55.6 D= 7.8 E= 11.5 OMIT= 1.2

149
A SHOPKEEPER HAS X KG OF TEA IN STOCK. HE SELLS 15 KG AND
Key=3 Grid=104 Form=0 Position=27
Difficulty= 57.1 Sample= 408.
A= 5.1 B= 14.2 C= 57.1 D= 3.2 E= 14.5 OMIT= 5.9

75
IN THE FIGURE THE LITTLE SQUARES ARE ALL THE SAME SIZE AND
Key=3 Grid= 2 Form=0 Position=28
Difficulty= 45.1 Sample= 408.
A= 23.0 B= 15.9 C= 45.1 D= 9.1 E= 3.4 OMIT= 3.4

68
THE DISTANCE BETWEEN TWO TOWNS IS USUALLY MEASURED IN
Key=5 Grid=401 Form=0 Position=29
Difficulty= 93.9 Sample= 408.
A= 0.5 B= 0.7 C= 0.7 D= 3.7 E= 93.9 OMIT= 0.5

19
THE TABLE BELOW COMPARES THE HEIGHT FROM WHICH A BALL IS
Key=3 Grid=107 Form=0 Position=30
Difficulty= 29.7 Sample= 408.
A= 22.3 B= 16.9 C= 29.7 D= 16.2 E= 6.4 OMIT= 8.6

```
-----------
  3
  2/5 + 3/8 IS EQUAL TO
Key=5 Grid=  2 Form=0 Position=31
Difficulty=  54.9 Sample= 408.
-----------          A=  31.1 B=   5.6 C=   4.4 D=   2.9 E=  54.9 OMIT=   1.0
140
  7 3/20 IS EQUAL TO
Key=2 Grid=  3 Form=0 Position=32
Difficulty=  28.7 Sample= 408.
-----------          A=  22.8 B=  28.7 C=  29.4 D=  10.8 E=   6.1 OMIT=   2.2
  8
  IN A SCHOOL OF 800 PUPILS, 300 ARE BOYS. THE RATIO OF THE
Key=5 Grid=  4 Form=0 Position=33
Difficulty=  42.6 Sample= 408.
-----------          A=  29.4 B=  11.8 C=   2.0 D=  12.5 E=  42.6 OMIT=   1.7
179
  WHAT IS 20 AS A PERCENT OF 80?
Key=3 Grid=  4 Form=0 Position=34
Difficulty=  21.8 Sample= 408.
-----------          A=  28.9 B=   9.6 C=  21.8 D=  22.8 E=  15.9 OMIT=   1.0
196
  THE SENTENCE 'A NUMBER X DECREASED BY 6 IS LESS THAN 12' CAN
Key=3 Grid=106 Form=0 Position=35
Difficulty=  57.6 Sample= 408.
-----------          A=  20.6 B=   5.9 C=  57.6 D=   2.0 E=  10.8 OMIT=   3.2
  9
  30 IS 75% OF WHAT NUMBER?
Key=1 Grid=  4 Form=0 Position=36
Difficulty=  45.1 Sample= 408.
-----------          A=  45.1 B=  18.4 C=  12.3 D=  11.8 E=   8.6 OMIT=   3.9
 43
  WHICH OF THE POINTS A, B, C, D, E ON THIS NUMBER LINE
Key=5 Grid=  2 Form=0 Position=37
Difficulty=  23.0 Sample= 408.
-----------          A=   7.6 B=  17.6 C=  28.4 D=  17.6 E=  23.0 OMIT=   5.6
 46
  20% OF 125 IS EQUAL TO
Key=4 Grid=  4 Form=0 Position=38
Difficulty=  32.8 Sample= 408.
-----------          A=  23.0 B=  13.0 C=  15.4 D=  32.8 E=   8.1 OMIT=   7.6
 28
  WHAT ARE THE COORDINATES OF POINT P?
Key=4 Grid=207 Form=0 Position=39
Difficulty=  50.2 Sample= 408.
-----------          A=  30.4 B=   5.1 C=   7.8 D=  50.2 E=   2.5 OMIT=   3.9
156
  TRIANGLES PQR AND STU ARE SIMILAR. HOW LONG IS SU?
Key=3 Grid=204 Form=0 Position=40
Difficulty=  37.0 Sample= 408.
                     A=  30.4 B=   8.1 C=  37.0 D=  16.4 E=   4.7 OMIT=   3.4
```

42

WHICH OF THE FOLLOWING IS EQUAL TO A QUARTER OF A MILLION?

Key=4 Grid= 1 Form=1 Position= 1
Difficulty= 70.8 Sample= 106.

A= 4.7 B= 2.8 C= 11.3 D= 70.8 E= 9.4 OMIT= 0.9

30

IN WHICH DIAGRAM BELOW IS THE SECOND FIGURE THE IMAGE OF THE

Key=3 Grid=209 Form=1 Position= 2
Difficulty= 69.8 Sample= 106.

A= 15.1 B= 2.8 C= 69.8 D= 7.5 E= 3.8 OMIT= 0.9

185

WHICH IS THE CLOSEST ESTIMATE FOR THE ANSWER TO 5 3/7 + 6 5/8

Key=3 Grid= 2 Form=1 Position= 3
Difficulty= 58.5 Sample= 106.

A= 3.8 B= 18.9 C= 58.5 D= 10.4 E= 8.5 OMIT= 0.0

87

THE DAVIS FAMILY TOOK A CAR TRIP FROM ANABRU THROUGH BERGEN

Key=3 Grid=106 Form=1 Position= 4
Difficulty= 17.0 Sample= 106.

A= 4.7 B= 12.3 C= 17.0 D= 9.4 E= 53.8 OMIT= 2.8

195

A NUMBER X IS MULTIPLIED BY ITSELF AND THE RESULT IS ADDED TO

Key=5 Grid=104 Form=1 Position= 5
Difficulty= 34.0 Sample= 106.

A= 27.4 B= 9.4 C= 17.0 D= 8.5 E= 34.0 OMIT= 3.8

25

THE TRIANGLES SHOWN ABOVE ARE CONGRUENT. THE MEASURES OF

Key=2 Grid=203 Form=1 Position= 6
Difficulty= 19.8 Sample= 106.

A= 55.7 B= 19.8 C= 8.5 D= 8.5 E= 7.5 OMIT= 0.0

101

A 15 CENTIMETER PIECE IS CUT FROM A RIBBON 1 METER LONG. WHAT

Key=1 Grid=401 Form=1 Position= 7
Difficulty= 84.9 Sample= 106.

A= 84.9 B= 3.8 C= 4.7 D= 3.8 E= 2.8 OMIT= 0.0

171

IF D IS THE DIRECTION OF PROJECTION AND A IS THE AXIS OF

Key=2 Grid=215 Form=1 Position= 8
Difficulty= 23.6 Sample= 106.

A= 15.1 B= 23.6 C= 13.2 D= 11.3 E= 29.2 OMIT= 7.5

72

THE FIGURE ABOVE SHOWS A RECTANGULAR BOX. WHICH OF THE

Key=4 Grid=403 Form=1 Position= 9
Difficulty= 29.2 Sample= 106.

A= 21.7 B= 13.2 C= 16.0 D= 29.2 E= 16.0 OMIT= 3.8

58

LINES AB AND CD ARE PARALLEL. TWO ANGLES WHOSE MEASURES

Key=2 Grid=202 Form=1 Position=10
Difficulty= 34.0 Sample= 106.

A= 17.9 B= 34.0 C= 17.9 D= 8.5 E= 15.1 OMIT= 6.6

132
A TEAM SCORES AN AVERAGE OF 3 POINTS PER GAME OVER 5 GAMES.
Key=5 Grid=304 Form=1 Position=11
Difficulty= 75.5 Sample= 106.
A= 23.6 B= 0.0 C= 0.0 D= 0.0 E= 75.5 OMIT= 0.9

97
A TABLE SHOWS SCORES FOR A CLASS ON A 10-POINT TEST. HOW MANY
Key=2 Grid=302 Form=1 Position=12
Difficulty= 42.5 Sample= 106.
A= 21.7 B= 42.5 C= 26.4 D= 2.8 E= 5.7 OMIT= 0.9

187
3/8 - 1/5 IS EQUAL TO
Key=2 Grid= 2 Form=1 Position=13
Difficulty= 57.5 Sample= 106.
A= 2.8 B= 57.5 C= 1.9 D= 9.4 E= 28.3 OMIT= 0.0

176
AMONG THE FOLLOWING LINES D1, D2, D3, D4, D5, WHICH HAS NO
Key=2 Grid=205 Form=1 Position=14
Difficulty= 24.5 Sample= 106.
A= 23.6 B= 24.5 C= 7.5 D= 14.2 E= 26.4 OMIT= 3.8

159
THE FIGURE ABOVE SHOWS A WOODEN CUBE WITH ONE CORNER CUT OFF
Key=5 Grid=212 Form=1 Position=15
Difficulty= 62.3 Sample= 106.
A= 2.8 B= 3.8 C= 4.7 D= 26.4 E= 62.3 OMIT= 0.0

142
THE TABLE ABOVE SHOWS THE VALUES OF X AND Y, WHERE X IS
Key=5 Grid= 4 Form=1 Position=16
Difficulty= 27.4 Sample= 106.
A= 7.5 B= 22.6 C= 17.0 D= 16.0 E= 27.4 OMIT= 9.4

74
(TRIANGULAR ARRAY OF 1'S) WHAT IS THE SUM OF THE 50TH ROW?
Key=1 Grid= 1 Form=1 Position=17
Difficulty= 25.5 Sample= 106.
A= 25.5 B= 60.4 C= 2.8 D= 10.4 E= 0.9 OMIT= 0.0

77
THE POSITION ON THE SCALE INDICATED BY THE ARROW IS
Key=2 Grid= 3 Form=1 Position=18
Difficulty= 65.1 Sample= 106.
A= 6.6 B= 65.1 C= 1.9 D= 26.4 E= 0.0 OMIT= 0.0

66
THE GRAPH SHOWS THE DISTANCE TRAVELED BY A TRACTOR DURING A
Key=2 Grid=303 Form=1 Position=19
Difficulty= 41.5 Sample= 106.
A= 1.9 B= 41.5 C= 10.4 D= 20.8 E= 25.5 OMIT= 0.0

70
WHAT IS THE AREA OF THE ABOVE PARALLELOGRAM?
Key=4 Grid=404 Form=1 Position=20
Difficulty= 29.2 Sample= 106.
A= 11.3 B= 16.0 C= 34.9 D= 29.2 E= 7.5 OMIT= 0.9

108
.004)24.56 IN THE DIVISION ABOVE, THE CORRECT ANSWER IS
Key=5 Grid= 3 Form=1 Position=21
Difficulty= 39.6 Sample= 106.
A= 29.2 B= 7.5 C= 7.5 D= 15.1 E= 39.6 OMIT= 0.9

33
THE CIRCLE GRAPH SHOWS THE PROPORTION OF VARIOUS GRAIN CROPS
Key=1 Grid=303 Form=1 Position=22
Difficulty= 80.2 Sample= 106.
A= 80.2 B= 1.9 C= 2.8 D= 0.9 E= 14.2 OMIT= 0.0

191
THE PRICE OF AN ARTICLE WAS $100. THE PRICE WAS FIRST
Key=2 Grid= 4 Form=1 Position=23
Difficulty= 2.8 Sample= 106.
A= 10.4 B= 2.8 C= 79.2 D= 1.9 E= 5.7 OMIT= 0.0

48
IF 10**2 * 10**3 = 10**N THEN N IS EQUAL TO
Key=2 Grid= 6 Form=1 Position=24
Difficulty= 61.3 Sample= 106.
A= 14.2 B= 61.3 C= 21.7 D= 1.9 E= 0.0 OMIT= 0.9

192
A CAR TAKES 15 MINUTES TO TRAVEL 10 KILOMETERS. WHAT IS THE
Key=2 Grid= 4 Form=1 Position=25
Difficulty= 23.6 Sample= 106.
A= 8.5 B= 23.6 C= 15.1 D= 9.4 E= 40.6 OMIT= 2.8

115
IF X = -3, THE VAUE OF -3X IS
Key=5 Grid=104 Form=1 Position=26
Difficulty= 30.2 Sample= 106.
A= 36.8 B= 24.5 C= 3.8 D= 1.9 E= 30.2 OMIT= 2.8

22
AB, CD, AD EF ARE INTERSECTING STRAIGHT LINES AS SHOWN
Key=1 Grid=202 Form=1 Position=27
Difficulty= 81.1 Sample= 106.
A= 81.1 B= 3.8 C= 7.5 D= 3.8 E= 1.9 OMIT= 1.9

53
WHEN X = 2, (7X + 4) / (5X - 4) IS EQUAL TO
Key=2 Grid=105 Form=1 Position=28
Difficulty= 39.6 Sample= 106.
A= 17.9 B= 39.6 C= 23.6 D= 8.5 E= 4.7 OMIT= 5.7

194
WHAT IS THE AREA OF TRIANGLE PQR?
Key=3 Grid=404 Form=1 Position=29
Difficulty= 28.3 Sample= 106.
A= 16.0 B= 23.6 C= 28.3 D= 17.9 E= 9.4 OMIT= 4.7

11
WHAT IS THE SQUARE ROOT OF 12 * 75?
Key=2 Grid= 8 Form=1 Position=30
Difficulty= 40.6 Sample= 106.
A= 5.7 B= 40.6 C= 6.6 D= 6.6 E= 37.7 OMIT= 2.8

57
THE FIGURE QRST IS A SQUARE AND PQT AN EQUILATERAL TRIANGLE.
Key=4 Grid=201 Form=1 Position=31
Difficulty= 40.6 Sample= 106.
A= 7.5 B= 7.5 C= 5.7 D= 40.6 E= 35.8 OMIT= 2.8

106
PETER AND PAUL DECIDED TO START SAVING MONEY. PETER CAN SAVE
Key=4 Grid= 1 Form=1 Position=32
Difficulty= 50.9 Sample= 106.
A= 22.6 B= 10.4 C= 12.3 D= 50.9 E= 1.9 OMIT= 1.9

84
0.00046 IS EQUAL TO
Key=2 Grid=103 Form=1 Position=33
Difficulty= 25.5 Sample= 106.
A= 16.0 B= 25.5 C= 35.8 D= 10.4 E= 7.5 OMIT= 4.7

29
ONE OF THE FOLLOWING POINTS CAN BE JOINED TO THE POINT (-3,4)
Key=1 Grid=207 Form=1 Position=34
Difficulty= 13.2 Sample= 106.
A= 13.2 B= 7.5 C= 15.1 D= 16.0 E= 38.7 OMIT= 9.4

14
WHICH OF THE FOLLOWING SEQUENCES OF NUMBERS IS IN THE ORDER
Key=3 Grid=102 Form=1 Position=35
Difficulty= 39.6 Sample= 106.
A= 10.4 B= 9.4 C= 39.6 D= 18.9 E= 14.2 OMIT= 7.5

178
72% IS EQUAL TO
Key=5 Grid= 4 Form=2 Position= 1
Difficulty= 36.5 Sample= 104.
A= 6.7 B= 9.6 C= 44.2 D= 2.9 E= 36.5 OMIT= 0.0

182
WHICH OF THE FOLLOWING IS THIRTY-SEVEN THOUSANDTHS?
Key=4 Grid= 3 Form=2 Position= 2
Difficulty= 47.1 Sample= 104.
A= 19.2 B= 1.9 C= 4.8 D= 47.1 E= 26.9 OMIT= 0.0

131
THE PETALS ON 100 FLOWERS OF DIFFERENT KINDS WERE CAREFULLY
Key=4 Grid=302 Form=2 Position= 3
Difficulty= 42.3 Sample= 104.
A= 18.3 B= 17.3 C= 11.5 D= 42.3 E= 1.0 OMIT= 9.6

129
THERE ARE 7,000,000 GIRLS UNDER THE AGE OF 21 IS A COUNTRY
Key=4 Grid=303 Form=2 Position= 4
Difficulty= 18.3 Sample= 104.
A= 26.9 B= 19.2 C= 25.0 D= 18.3 E= 2.9 OMIT= 7.7

55
FOR THE TABLE SHOWN, A FORMULA THAT COULD RELATE M AND N IS
Key=5 Grid=107 Form=2 Position= 5
Difficulty= 16.3 Sample= 104.
A= 21.2 B= 14.4 C= 19.2 D= 8.7 E= 16.3 OMIT= 20.2

90
THE LINE M IS A LINE OF SYMMETRY FOR FIGURE ABCDE. THE
Key=3 Grid=202 Form=2 Position= 6
Difficulty= 51.0 Sample= 104.
A= 15.4 B= 4.8 C= 51.0 D= 16.3 E= 8.7 OMIT= 3.8

6
ALEXANDRA WALKED FROM RIVERVIEW TO BRIDGEPORT, WHICH ARE
Key=3 Grid= 3 Form=2 Position= 7
Difficulty= 29.8 Sample= 104.
A= 16.3 B= 36.5 C= 29.8 D= 1.0 E= 16.3 OMIT= 0.0

59
THREE STRAIGHT LINES INTERSECT AS SHOWN IN THE DIAGRAM.
Key=4 Grid=202 Form=2 Position= 8
Difficulty= 26.9 Sample= 104.
A= 10.6 B= 27.9 C= 11.5 D= 26.9 E= 20.2 OMIT= 2.9

67
JOE HAD THREE TEST SCORES OF 78, 76 AND 74, WHILE MARY HAD
Key=3 Grid=304 Form=2 Position= 9
Difficulty= 84.6 Sample= 104.
A= 1.9 B= 1.9 C= 84.6 D= 2.9 E= 7.7 OMIT= 1.0

139
(3/5)/(2/7) IS EQUAL TO
Key=1 Grid= 2 Form=2 Position=10
Difficulty= 59.6 Sample= 104.
A= 59.6 B= 1.9 C= 9.6 D= 21.2 E= 4.8 OMIT= 2.9

173
U AND V ARE TWO VECTORS. WHICH FIGURE BELOW REPRESENTS U - V?
Key=4 Grid=215 Form=2 Position=11
Difficulty= 7.7 Sample= 104.
A= 41.3 B= 19.2 C= 7.7 D= 7.7 E= 12.5 OMIT= 11.5

18
THE ERROR IN THE ABOVE REASONING, IF ONE EXISTS, FIRST
Key=1 Grid=106 Form=2 Position=12
Difficulty= 26.0 Sample= 104.
A= 26.0 B= 10.6 C= 18.3 D= 7.7 E= 29.8 OMIT= 7.7

62
IN THE ABOVE RECTANGLE THE MEASURE OF ANGLES ROQ IS
Key=3 Grid=208 Form=2 Position=13
Difficulty= 22.1 Sample= 104.
A= 4.8 B= 23.1 C= 22.1 D= 11.5 E= 34.6 OMIT= 3.8

96
TRIANGLE ABC AND TRIANGLE A'B'C' ARE CONGRUENT AND THEIR
Key=5 Grid=209 Form=2 Position=14
Difficulty= 26.9 Sample= 104.
A= 23.1 B= 21.2 C= 11.5 D= 14.4 E= 26.9 OMIT= 2.9

137
WHICH OF THE FOLLOWING OPERATIONS WITH WHOLE NUMBERS WILL
Key=4 Grid= 1 Form=2 Position=15
Difficulty= 46.2 Sample= 104.
A= 17.3 B= 9.6 C= 13.5 D= 46.2 E= 13.5 OMIT= 0.0

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----------
 10
  THE VALUE OF 2**3 * 3**2 IS
Key=4 Grid=  6 Form=2 Position=16
Difficulty=  50.0 Sample= 104.
                  A=   0.0 B=  16.3 C=   5.8 D=  50.0 E=  26.9 OMIT=   1.0
----------
102
  THE MEASURE OF THE ANGLE SHOWN IS NEAREST TO
Key=4 Grid=402 Form=2 Position=17
Difficulty=  30.8 Sample= 104.
                  A=   1.9 B=   3.8 C=  61.5 D=  30.8 E=   1.9 OMIT=   0.0
----------
 71
  THE RECTANGLE SHOWN ABOVE IS CUT ALONG THE DOTTED LINES, AND
Key=3 Grid=404 Form=2 Position=18
Difficulty=  22.1 Sample= 104.
                  A=  10.6 B=  31.7 C=  22.1 D=   4.8 E=  26.0 OMIT=   4.8
----------
161
  HOW MUCH LONGER DOES IT TAKE FOR CAR B TO GO 50 KILOMETERS
Key=1 Grid=303 Form=2 Position=19
Difficulty=  51.9 Sample= 104.
                  A=  51.9 B=  13.5 C=  12.5 D=  10.6 E=   5.8 OMIT=   5.8
----------
 80
  WHICH OF THESE NUMBERS IS A PRIME NUMBER?
Key=3 Grid=  5 Form=2 Position=20
Difficulty=  54.8 Sample= 104.
                  A=  21.2 B=   2.9 C=  54.8 D=   8.7 E=   7.7 OMIT=   4.8
----------
 89
  AB // DC AND AD // BC. QUADRILATERAL ABCD IS A
Key=2 Grid=201 Form=2 Position=21
Difficulty=  70.2 Sample= 104.
                  A=  18.3 B=  70.2 C=   0.0 D=   3.8 E=   7.7 OMIT=   0.0
----------
172
  FIND THE VALUE OF N. N = 10**3 + 10**1 + 10**0 + 10**(-2)
Key=3 Grid=103 Form=2 Position=22
Difficulty=  20.2 Sample= 104.
                  A=   4.8 B=  15.4 C=  20.2 D=   4.8 E=  51.0 OMIT=   3.8
----------
143
  IF THERE ARE 300 CALORIES IN 100 GRAMS OF A CERTAIN FOOD,
Key=1 Grid=  4 Form=2 Position=23
Difficulty=  58.7 Sample= 104.
                  A=  58.7 B=  15.4 C=  11.5 D=   3.8 E=   1.9 OMIT=   8.7
----------
 15
  SIMPLIFY: 5X + 3Y + 2X - 4Y
Key=4 Grid=104 Form=2 Position=24
Difficulty=   9.6 Sample= 104.
                  A=  24.0 B=  25.0 C=  28.8 D=   9.6 E=   1.9 OMIT=  10.6
----------
 93
  WHICH OF THESE IS A CORRECT STATEMENT FOR THIS TRIANGLE?
Key=1 Grid=206 Form=2 Position=25
Difficulty=   9.6 Sample= 104.
                  A=   9.6 B=   8.7 C=   4.8 D=   8.7 E=  55.8 OMIT=  12.5
```

193
(TRAPEZOID WITH DIMENSIONS) X IS EQUAL TO
Key=3 Grid=206 Form=2 Position=26
Difficulty= 51.9 Sample= 104.
A= 10.6 B= 26.9 C= 51.9 D= 3.8 E= 4.8 OMIT= 1.9

184
THE LARGE SQUARE HAS AREA 1 SQUARE UNIT. THE AREA OF THE
Key=3 Grid= 3 Form=2 Position=27
Difficulty= 26.0 Sample= 104.
A= 45.2 B= 5.8 C= 26.0 D= 11.5 E= 5.8 OMIT= 5.8

37
THE TOTAL AREA OF THE TWO TRIANGLES IS
Key=1 Grid=404 Form=2 Position=28
Difficulty= 23.1 Sample= 104.
A= 23.1 B= 26.0 C= 13.5 D= 19.2 E= 11.5 OMIT= 6.7

85
IF Y DOLLARS ARE SHARED EQUALLY AMONG FOUR BOYS, HOW MANY
Key=4 Grid=104 Form=2 Position=29
Difficulty= 54.8 Sample= 104.
A= 3.8 B= 19.2 C= 12.5 D= 54.8 E= 6.7 OMIT= 2.9

113
(-6) - (-8) IS EQUAL TO
Key=2 Grid=101 Form=2 Position=30
Difficulty= 31.7 Sample= 104.
A= 5.8 B= 31.7 C= 18.3 D= 1.0 E= 41.3 OMIT= 1.9

135
THE LENGTH OF A BOX WAS MEASURED AND FOUND TO BE 9 CM TO THE
Key=5 Grid=403 Form=2 Position=31
Difficulty= 45.2 Sample= 104.
A= 23.1 B= 15.4 C= 9.6 D= 4.8 E= 45.2 OMIT= 1.9

197
THE PICTURE ABOVE SHOWS HOW PEDRO USED A SHORT TREE TO FIND
Key=1 Grid=204 Form=2 Position=32
Difficulty= 43.3 Sample= 104.
A= 43.3 B= 13.5 C= 9.6 D= 9.6 E= 19.2 OMIT= 4.8

145
THE SQUARE ROOT OF 75 IS BETWEEN
Key=5 Grid= 8 Form=2 Position=33
Difficulty= 41.3 Sample= 104.
A= 8.7 B= 12.5 C= 15.4 D= 14.4 E= 41.3 OMIT= 7.7

1
(22 * 18) - (47 + 59) IS EQUAL TO
Key=1 Grid= 1 Form=2 Position=34
Difficulty= 79.8 Sample= 104.
A= 79.8 B= 6.7 C= 4.8 D= 1.0 E= 3.8 OMIT= 3.8

44
THERE ARE 35 STUDENTS IN A CLASS. 1/5 OF THEM COME TO SCHOOL
Key=2 Grid= 2 Form=2 Position=35
Difficulty= 44.2 Sample= 104.
A= 14.4 B= 44.2 C= 18.3 D= 14.4 E= 3.8 OMIT= 4.8

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 27
  (RIGHT TRIANGLE WITH 2 SIDES GIVE) WHAT IS THE VALUE OF S?
Key=2 Grid=206 Form=3 Position= 1
Difficulty=  28.8 Sample= 104.
                  A=   8.7 B=  28.8 C=  15.4 D=  30.8 E=  16.3 OMIT=   0.0
-----------
 36
  WHICH OF THE FOLLOWING IS ... TO THE WEIGHT OF A NORMAL MAN?
Key=2 Grid=401 Form=3 Position= 2
Difficulty=  64.4 Sample= 104.
                  A=   1.0 B=  64.4 C=  30.8 D=   2.9 E=   1.0 OMIT=   0.0
-----------
  4
  WHICH OF THE FOLLOWING IS A PAIR OF EQUIVALENT FRACTIONS?
Key=4 Grid=  2 Form=3 Position= 3
Difficulty=  80.8 Sample= 104.
                  A=   2.9 B=   2.9 C=   6.7 D=  80.8 E=   4.8 OMIT=   1.9
-----------
198
  WHICH OF THE FOLLOWING PATTERNS CAN BE FOLDED ALONG THE
Key=3 Grid=212 Form=3 Position= 4
Difficulty=  60.6 Sample= 104.
                  A=   8.7 B=  12.5 C=  60.6 D=   5.8 E=  12.5 OMIT=   0.0
-----------
107
  1 2/5 - 1/2 IS EQUAL TO
Key=2 Grid=  2 Form=3 Position= 5
Difficulty=  58.7 Sample= 104.
                  A=   9.6 B=  58.7 C=  12.5 D=   1.9 E=  15.4 OMIT=   1.9
-----------
163
  THERE ARE FIVE BLACK BUTTONS AND ONE RED BUTTON IN A JAR. IF
Key=2 Grid=306 Form=3 Position= 6
Difficulty=  45.2 Sample= 104.
                  A=   2.9 B=  45.2 C=  36.5 D=   4.8 E=  10.6 OMIT=   0.0
-----------
 65
  YOU WISH TO KNOW ABOUT THE POPULARITY OF THE SOFT-DRINK SLOSH
Key=5 Grid=301 Form=3 Position= 7
Difficulty=  73.1 Sample= 104.
                  A=   1.0 B=  13.5 C=   7.7 D=   3.8 E=  73.1 OMIT=   1.0
-----------
138
  A GROUP OF CHILDREN WAS DIVIDED INTO 7 TEAMS WITH NINE IN
Key=3 Grid=  1 Form=3 Position= 8
Difficulty=  70.2 Sample= 104.
                  A=   8.7 B=   0.0 C=  70.2 D=   5.8 E=  13.5 OMIT=   1.9
-----------
125
  IF TWO TRIANGLES ARE SIMILAR, WHICH OF THE FOLLOWING
Key=1 Grid=204 Form=3 Position= 9
Difficulty=  29.8 Sample= 104.
                  A=  29.8 B=  14.4 C=  14.4 D=  11.5 E=  27.9 OMIT=   1.9
-----------
160
  THREE HOURS AFTER STARTING, CAR A IS HOW MANY KM AHEAD OF CAR
Key=4 Grid=303 Form=3 Position=10
Difficulty=  47.1 Sample= 104.
                  A=  16.3 B=   9.6 C=   1.9 D=  47.1 E=  21.2 OMIT=   3.8
```

169

SUPPOSE YOU START AT POINT M(-1,-1), MOVE A DISTANCE OF ONE

Key=3 Grid=207 Form=3 Position=11

Difficulty= 24.0 Sample= 104.

A= 21.2 B= 12.5 C= 24.0 D= 20.2 E= 18.3 OMIT= 3.8

52

THE COST OF PRINTING GREETING CARDS CONSISTS OF A FIXED

Key=1 Grid=104 Form=3 Position=12

Difficulty= 44.2 Sample= 104.

A= 44.2 B= 11.5 C= 10.6 D= 20.2 E= 8.7 OMIT= 4.8

117

'SIX TIMES A CERTAIN NUMBER (CALL IT Q) EQUALS THE SUM OF

Key=4 Grid=106 Form=3 Position=13

Difficulty= 47.1 Sample= 104.

A= 13.5 B= 8.7 C= 17.3 D= 47.1 E= 3.8 OMIT= 9.6

177

CANDIDATE A RECEIVED 70 PERCENT OF THE VOTES CAST IN AN

Key=3 Grid= 4 Form=3 Position=14

Difficulty= 40.4 Sample= 104.

A= 12.5 B= 6.7 C= 40.4 D= 19.2 E= 17.3 OMIT= 3.8

136

WHAT IS THE CAPACITY OF A CUBIC CONTAINER 10 CM BY 10 CM BY

Key=1 Grid=404 Form=3 Position=15

Difficulty= 26.0 Sample= 104.

A= 26.0 B= 15.4 C= 16.3 D= 14.4 E= 24.0 OMIT= 3.8

116

IF X = Y = Z = 1, THEN (X - Z) / (X + Y) IS EQUAL TO

Key=3 Grid=104 Form=3 Position=16

Difficulty= 32.7 Sample= 104.

A= 9.6 B= 14.4 C= 32.7 D= 19.2 E= 19.2 OMIT= 4.8

104

MICHAEL HAS A LARGE NUMER OF WOODED BLOCKS WHICH ARE CUBICAL

Key=5 Grid=404 Form=3 Position=17

Difficulty= 52.9 Sample= 104.

A= 19.2 B= 13.5 C= 7.7 D= 3.8 E= 52.9 OMIT= 2.9

47

IF THE RATIO OF 2 TO 5 EQUALS THE RATIO OF N TO 100, THEN N

Key=3 Grid= 4 Form=3 Position=18

Difficulty= 54.8 Sample= 104.

A= 20.2 B= 13.5 C= 54.8 D= 4.8 E= 2.9 OMIT= 3.8

144

ONE BELL RIGHTS EVERY 8 MINUTES, A SECOND BELL RINGS EVERY 12

Key=4 Grid= 5 Form=3 Position=19

Difficulty= 53.8 Sample= 104.

A= 1.0 B= 14.4 C= 4.8 D= 53.8 E= 22.1 OMIT= 3.8

166

WHAT IS THE SURFACE AREA OF THIS SOLID RECTANGULAR BOX?

Key=5 Grid=404 Form=3 Position=20

Difficulty= 16.3 Sample= 104.

A= 8.7 B= 4.8 C= 8.7 D= 58.7 E= 16.3 OMIT= 2.9

112

3.23 * 10**5 IS EQUAL TO

Key=4 Grid= 6 Form=3 Position=21

Difficulty= 34.6 Sample= 104.

A= 2.9 B= 8.7 C= 7.7 D= 34.6 E= 45.2 OMIT= 1.0

141

THE SPEED OF SOUND IS APPROXIMATELY 340 METERS PER SECOND.

Key=2 Grid= 3 Form=3 Position=22

Difficulty= 46.2 Sample= 104.

A= 7.7 B= 46.2 C= 5.8 D= 2.9 E= 29.8 OMIT= 7.7

21

A QUADRILATERAL MUST BE A PARALLELOGRAM IF IT HAS

Key=5 Grid=201 Form=3 Position=23

Difficulty= 30.8 Sample= 104.

A= 12.5 B= 25.0 C= 13.5 D= 14.4 E= 30.8 OMIT= 3.8

148

WHICH OF THE FOLLOWING IS FALSE WHEN A, B, AND C ARE

Key=5 Grid=104 Form=3 Position=24

Difficulty= 30.8 Sample= 104.

A= 19.2 B= 10.6 C= 10.6 D= 19.2 E= 30.8 OMIT= 9.6

183

74.236 ROUNDED TO THE NEAREST HUNDREDTH IS

Key=4 Grid= 3 Form=3 Position=25

Difficulty= 45.2 Sample= 104.

A= 29.8 B= 2.9 C= 12.5 D= 45.2 E= 8.7 OMIT= 1.0

152

A BOWLING BALL TRAVELS 4 METERS PER SECOND. THE DISTANCE IN

Key=3 Grid=107 Form=3 Position=26

Difficulty= 72.1 Sample= 104.

A= 2.9 B= 9.6 C= 72.1 D= 1.0 E= 8.7 OMIT= 5.8

99

IN THE GRAPH, RAINFALL IN CENTIMETERS IS PLOTTED FOR 13 WEEKS

Key=2 Grid=304 Form=3 Position=27

Difficulty= 42.3 Sample= 104.

A= 8.7 B= 42.3 C= 27.9 D= 7.7 E= 6.7 OMIT= 6.7

73

162 * 45 IS EQUAL TO

Key=5 Grid= 1 Form=3 Position=28

Difficulty= 96.2 Sample= 104.

A= 0.0 B= 1.9 C= 1.0 D= 0.0 E= 96.2 OMIT= 1.0

24

IF SEGMENT PQ WERE DRAWN FOR EACH FIGURE SHOWN BELOW, IT

Key=4 Grid=203 Form=3 Position=29

Difficulty= 59.6 Sample= 104.

A= 3.8 B= 6.7 C= 8.7 D= 59.6 E= 17.3 OMIT= 3.8

35

THE ARITHMETIC MEAN (AVERAGE) OF: 1.50, 2.40, 3.75 IS EQUAL

Key=2 Grid=304 Form=3 Position=30

Difficulty= 50.0 Sample= 104.

A= 7.7 B= 50.0 C= 4.8 D= 24.0 E= 12.5 OMIT= 1.0

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 40
  THERE IS A BRASS PLATE OF THE SHAPE AND DIMENSIONS SHOWN IN
Key=2 Grid=404 Form=3 Position=31
Difficulty=  23.1 Sample= 104.
                  A=  26.9 B=  23.1 C=  21.2 D=  13.5 E=  11.5 OMIT=   3.8
-----------
158
  TRIANGLE PQT CAN BE ROTATED (TURNED) ONTO TRIANGLE SQR. THE
Key=2 Grid=209 Form=3 Position=32
Difficulty=  65.4 Sample= 104.
                  A=   4.8 B=  65.4 C=   6.7 D=  10.6 E=   9.6 OMIT=   2.9
-----------
 81
  SINCE 4 * 9 = 36, THE SQUARE ROOT OF 36 IS EQUAL TO
Key=4 Grid=  8 Form=3 Position=33
Difficulty=  26.0 Sample= 104.
                  A=  51.9 B=   4.8 C=   2.9 D=  26.0 E=   8.7 OMIT=   5.8
-----------
128
  IF, IN THE GIVEN FIGURE, PQ AND RS ARE INTERSECTING STRAIGHT
Key=3 Grid=202 Form=3 Position=34
Difficulty=  38.5 Sample= 104.
                  A=   6.7 B=  32.7 C=  38.5 D=   6.7 E=  11.5 OMIT=   3.8
-----------
 88
  A/15 - B/5 IS EQUAL TO
Key=1 Grid=105 Form=3 Position=35
Difficulty=  14.4 Sample= 104.
                  A=  14.4 B=  10.6 C=  35.6 D=  14.4 E=  19.2 OMIT=   5.8
-----------
188
  THE PICTURE SHOWS SOME BLACK AND SOME WHITE MARBLES. OF ALL
Key=4 Grid=  2 Form=4 Position= 1
Difficulty=  48.0 Sample= 102.
                  A=   0.0 B=  10.8 C=  11.8 D=  48.0 E=  29.4 OMIT=   0.0
-----------
 39
  WHAT IS THE VOLUME OF A RECTANGULAR BOX WITH INTERIOR
Key=5 Grid=404 Form=4 Position= 2
Difficulty=  41.2 Sample= 102.
                  A=  44.1 B=   4.9 C=   6.9 D=   2.0 E=  41.2 OMIT=   1.0
-----------
 78
  A RUNNER RAN 3,000 METERS IN EXACTLY 8 MINUTES. WHAT WAS
Key=2 Grid=  3 Form=4 Position= 3
Difficulty=  26.5 Sample= 102.
                  A=  29.4 B=  26.5 C=   9.8 D=  23.5 E=   4.9 OMIT=   5.9
-----------
126
  THE STRAIGHT LINE JOINING THE POINTS (2,3) AND (2,7) CUTS
Key=5 Grid=207 Form=4 Position= 4
Difficulty=  22.5 Sample= 102.
                  A=   7.8 B=  20.6 C=  12.7 D=  27.5 E=  22.5 OMIT=   8.8
-----------
 82
  THE SET OF INTEGERS LESS THAN 5 IS REPRESENTED ON ONE OF THE
Key=1 Grid=101 Form=4 Position= 5
Difficulty=  22.5 Sample= 102.
                  A=  22.5 B=  15.7 C=   9.8 D=  24.5 E=  24.5 OMIT=   2.9
```

105
WHICH OF THE FOLLOWING IS (ARE) TRUE?
Key=5 Grid= 1 Form=4 Position= 6
Difficulty= 13.7 Sample= 102.
A= 33.3 B= 8.8 C= 17.6 D= 23.5 E= 13.7 OMIT= 2.9

134
EACH OF THE SMALL SQUARES IN THE FIGURE IS 1 SQUARE UNIT.
Key=3 Grid=402 Form=4 Position= 7
Difficulty= 40.2 Sample= 102.
A= 15.7 B= 4.9 C= 40.2 D= 18.6 E= 20.6 OMIT= 0.0

98
HERE IS A TABLE OF DATA AND A GRAPH OF THE SAME DATA. WHAT IS
Key=4 Grid=303 Form=4 Position= 8
Difficulty= 72.5 Sample= 102.
A= 3.9 B= 2.9 C= 6.9 D= 72.5 E= 8.8 OMIT= 4.9

199
THE AREA OF THE SHADED CIRCLE IS WHAT PART OF THE AREA OF THE
Key=3 Grid=404 Form=4 Position= 9
Difficulty= 58.8 Sample= 102.
A= 2.0 B= 11.8 C= 58.8 D= 4.9 E= 21.6 OMIT= 1.0

146
FIND THE SUM: 3 WEEKS 5 DAYS + 9 WEEKS 6 DAYS
Key=4 Grid= 9 Form=4 Position=10
Difficulty= 43.1 Sample= 102.
A= 3.9 B= 7.8 C= 29.4 D= 43.1 E= 13.7 OMIT= 2.0

162
THE GRAPH SHOWS THE TIME OF TRAVEL BY PUPILS FROM HOME TO
Key=3 Grid=304 Form=4 Position=11
Difficulty= 48.0 Sample= 102.
A= 10.8 B= 11.8 C= 48.0 D= 18.6 E= 9.8 OMIT= 1.0

2
MATCHSTICKS ARE ARRANGED AS FOLLOWS. IF THE PATTERN IS
Key=2 Grid= 1 Form=4 Position=12
Difficulty= 40.2 Sample= 102.
A= 19.6 B= 40.2 C= 15.7 D= 4.9 E= 15.7 OMIT= 3.9

41
1054 - 865
Key=1 Grid= 1 Form=4 Position=13
Difficulty= 90.2 Sample= 102.
A= 90.2 B= 2.9 C= 1.0 D= 2.0 E= 3.9 OMIT= 0.0

110
IN A SCHOOL ELECTION WITH THREE CANDIDATES, JOE RECEIVED 120
Key=3 Grid= 4 Form=4 Position=14
Difficulty= 32.4 Sample= 102.
A= 4.9 B= 9.8 C= 32.4 D= 14.7 E= 37.3 OMIT= 1.0

26
ON LEVEL GROUND, A BOY 5 UNITS TALL CASTS A SHADOW 3 UNITS
Key=2 Grid=204 Form=4 Position=15
Difficulty= 35.3 Sample= 102.
A= 17.6 B= 35.3 C= 24.5 D= 15.7 E= 1.0 OMIT= 5.9

91

ONE OF THE FOLLOWING FIGURES IS CONGRUENT WITH THE FIGURE

Key=5 Grid=203 Form=4 Position=16

Difficulty= 67.6 Sample= 102.

A= 5.9 B= 2.0 C= 20.6 D= 3.9 E= 67.6 OMIT= 0.0

120

THE SYMBOL P INTERSECT Q REPRESENTS THE INTERSECTION OF SETS

Key=2 Grid=110 Form=4 Position=17

Difficulty= 24.5 Sample= 102.

A= 19.6 B= 24.5 C= 16.7 D= 21.6 E= 5.9 OMIT= 11.8

170

GIVEN VECTOR V AND VECTOR W AS SHOWN IN THE FIGURE ABOVE,

Key=2 Grid=215 Form=4 Position=18

Difficulty= 28.4 Sample= 102.

A= 16.7 B= 28.4 C= 12.7 D= 10.8 E= 17.6 OMIT= 13.7

155

IF AB IS A STRAIGHT LINE, WHAT IS THE MEASURE IN DEGREES OF

Key=4 Grid=202 Form=4 Position=19

Difficulty= 80.4 Sample= 102.

A= 6.9 B= 1.0 C= 3.9 D= 80.4 E= 3.9 OMIT= 3.9

54

WHICH EQUATION IS TRUE FOR ALL VALUES OF N?

Key=1 Grid=106 Form=4 Position=20

Difficulty= 52.9 Sample= 102.

A= 52.9 B= 3.9 C= 22.5 D= 3.9 E= 8.8 OMIT= 7.8

34

WHICH OF THESE IS A TRUE STATEMENT ABOUT THE INFORMATION

Key=3 Grid=303 Form=4 Position=21

Difficulty= 84.3 Sample= 102.

A= 1.0 B= 7.8 C= 84.3 D= 1.0 E= 2.0 OMIT= 3.9

174

A HALF-TURN ABOUT O IS APLIED TO THE FIGURE ABOVE. WHICH OF

Key=4 Grid=215 Form=4 Position=22

Difficulty= 45.1 Sample= 102.

A= 10.8 B= 7.8 C= 26.5 D= 45.1 E= 7.8 OMIT= 2.0

133

HOW MANY PIECES OF PIPE EACH 20 METERS LONG WOULD BE REQUIRED

Key=2 Grid=401 Form=4 Position=23

Difficulty= 41.2 Sample= 102.

A= 25.5 B= 41.2 C= 10.8 D= 12.7 E= 4.9 OMIT= 4.9

123

IN A QUADRILATERAL, TWO OF THE ANGLES EACH HAVE MEASURE OF

Key=1 Grid=202 Form=4 Position=24

Difficulty= 25.5 Sample= 102.

A= 25.5 B= 30.4 C= 3.9 D= 3.9 E= 33.3 OMIT= 2.9

186

1/2 * 1/4 IS EQUAL TO

Key=1 Grid= 2 Form=4 Position=25

Difficulty= 58.8 Sample= 102.

A= 58.8 B= 3.9 C= 11.8 D= 17.6 E= 5.9 OMIT= 2.0

118
(X/2) < 7 IS EQUIVALENT TO
Key=3 Grid=106 Form=4 Position=26
Difficulty= 41.2 Sample= 102.
A= 31.4 B= 4.9 C= 41.2 D= 7.8 E= 8.8 OMIT= 5.9

16
SODA COSTS A CENTS FOR EACH BOTTLE, BUT THERE IS A REFUND
Key=2 Grid=104 Form=4 Position=27
Difficulty= 12.7 Sample= 102.
A= 7.8 B= 12.7 C= 20.6 D= 24.5 E= 23.5 OMIT= 10.8

111
WHICH OF THE FOLLOWING EQUALS 7 * (3 + 9)?
Key=1 Grid= 5 Form=4 Position=28
Difficulty= 41.2 Sample= 102.
A= 41.2 B= 11.8 C= 2.0 D= 20.6 E= 22.5 OMIT= 2.0

63
PQRS IS A RECTANGLE. ITS IMAGE AFTER A TRANSFORMATION IS
Key=1 Grid=209 Form=4 Position=29
Difficulty= 27.5 Sample= 102.
A= 27.5 B= 12.7 C= 20.6 D= 23.5 E= 8.8 OMIT= 6.9

164
ACCORDING TO THE SCALE SHOWN, THE LENGTH OF SIDE BC OF A
Key=1 Grid=402 Form=4 Position=30
Difficulty= 55.9 Sample= 102.
A= 55.9 B= 25.5 C= 2.9 D= 9.8 E= 3.9 OMIT= 2.0

49
-5(6 - 4) IS EQUAL TO
Key=4 Grid=101 Form=4 Position=31
Difficulty= 58.8 Sample= 102.
A= 2.9 B= 5.9 C= 16.7 D= 58.8 E= 6.9 OMIT= 8.8

180
$150 IS DIVIDED IN THE RATIO OF 2 TO 3. THE SMALLER OF THE
Key=3 Grid= 4 Form=4 Position=32
Difficulty= 22.5 Sample= 102.
A= 22.5 B= 38.2 C= 22.5 D= 6.9 E= 2.0 OMIT= 7.8

7
(847.36) IN THE NUMBER IN THE BOX, THE DIGIT 6 REPRESENTS
Key=1 Grid= 3 Form=4 Position=33
Difficulty= 50.0 Sample= 102.
A= 50.0 B= 12.7 C= 23.5 D= 3.9 E= 4.9 OMIT= 4.9

32
HERE IS A TABLE THAT SHOWS THE NUMBER OF TREES PLANTED ALONG
Key=5 Grid=302 Form=4 Position=34
Difficulty= 70.6 Sample= 102.
A= 2.9 B= 2.0 C= 3.9 D= 12.7 E= 70.6 OMIT= 7.8

130
THE WEIGHT GAIN FROM 6 TO 10 MONTHS WAS
Key=2 Grid=304 Form=4 Position=35
Difficulty= 25.5 Sample= 102.
A= 10.8 B= 25.5 C= 9.8 D= 9.8 E= 39.2 OMIT= 4.9

Appendix III

The original French test booklets as used in the the Second International Mathematics Study in Ontario. Forms 3L, 2LA, 2LB, 2LC and 2LD.

Association internationale pour
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SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE DE MATHEMATIQUE
SERIE COMMUNE

LIVRET 3L

Institut d'études
pédagogiques de l'Ontario

1. 2 m + 3 mm est égal à:

A 2,0003 m

B 2,003 m

C 2,03 m

D 2,3 m

E 5 m

2. $\frac{1}{5}$ est égal à:

A 0,20%

B 2%

C 5%

D 20%

E 25%

3. Si $5x + 4 = 4x - 31$, alors x est égal à:

A -35

B -27

C 3

D 27

E 35

4. Pour une soirée, on a prévu quatre boîtes de crème glacée de 1 L. Après cette soirée, une boîte est vide, deux sont à moitié pleines et une est aux trois-quarts pleine. Combien de litres de crème glacée a-t-on consommé?

A $3\frac{3}{4}$ L

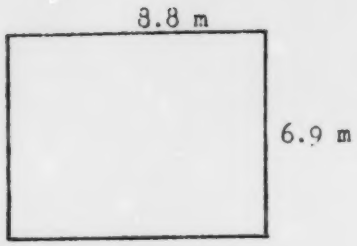
B $2\frac{3}{4}$ L

C $2\frac{1}{2}$ L

D $1\frac{3}{4}$ L

E aucune de ces réponses

5.



Quelle est la meilleure approximation de l'aire de ce rectangle?

A $48\ m^2$

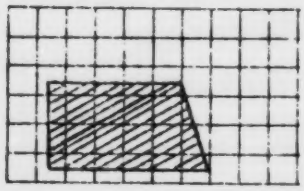
B $54\ m^2$

C $56\ m^2$

D $63\ m^2$

E $72\ m^2$

6.



□ 1 unité d'aire

L'aire de la partie hachurée, à l'unité d'aire la plus proche, est:

A 23 unités d'aire

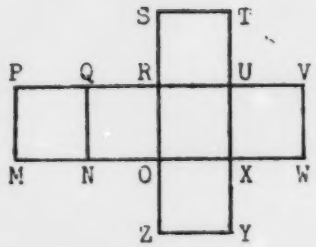
B 20 unités d'aire

C 18 unités d'aire

D 15 unités d'aire

E 12 unités d'aire

7.



Ce schéma représente le développement d'un cube. Si on reforme le cube, quels points seront confondus avec le point P?

A Les points Q et S

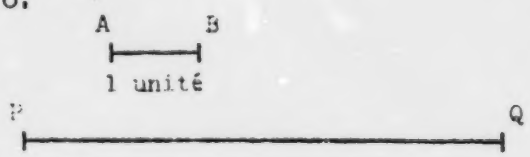
B Les points T et Y

C Les points W et Y

D Les points T et V

E Les points U et Y

8.



La longueur de AB est 1 unité. Quelle est la meilleure estimation de la longueur de PQ?

A 2 unités

B 6 unités

C 10 unités

D 14 unités

E 18 unités

9.

Sur la graduation, la flèche est entre les nombres

A 51 et 52

B 57 et 58

C 60 et 62

D 62 et 64

E 64 et 66

10. Un cube de plastique de 1 cm de côté a une masse de 1 g. Quelle est la masse d'un cube de même plastique et de 2 cm de côté?

A 8 g

B 4 g

C 3 g

D 2 g

E 1 g

11. A et B sont deux points sur une droite graduée. Les coordonnées de A et B sont -3 et 7, respectivement. Le point C de cet axe, tel que B soit le milieu du segment AC a pour coordonnée:

A -13

B $-\frac{1}{2}$

C +2

D +12

E +17

12. Un peintre mélange de la peinture verte et de la peinture jaune dans la proportion de 4 pour 7 pour obtenir la teinte désirée. S'il a 28 L de peinture verte, combien doit-il ajouter de litres de peinture jaune?

A 11 L

B 16 L

C 28 L

D 49 L

E 196 L

13. Si P = LW et si P = 12 et L = 3, alors W est égal à:

A $\frac{3}{4}$

B 3

C 4

D 12

E 36

14. On construit un modèle réduit de bateau: la longueur du modèle réduit est $\frac{1}{10}$ de celle du bateau d'origine. Sachant que le bateau d'origine fait 4 mètres de large, quelle doit être la largeur du modèle réduit?

A 0,1 m

B 0,4 m

C 1 m

D 4

E 40 m

15. Le nombre 0,2131 x 0,02958 est environ égal à:

A 0,6

B 0,06

C 0,006

D 0,0006

E 0,00006

16. (-2) x (-3) est égal à:

A -6

B -5

C -1

D 5

E 6

17. Quel est l'angle aigu?

A

B

C

D

E

18. Si $\frac{4x}{12} = 0$, alors x est égal à:

A 0

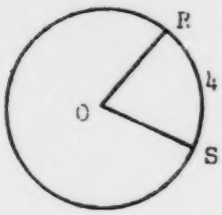
B 3

C 8

D 12

E 16

19.



La longueur de la circonférence de ce cercle de centre O est 24, celle de l'arc RS est 4. Quelle est la mesure, en degrés, de l'angle ROS?

A 24

B 30

C 45

D 60

E 90

20.

Dans une compétition de lancer de disque, le vainqueur a lancé à 61,60 m et le second à 59,72 m. De quelle longueur le vainqueur dépasse-t-il le second?

A 1,12 m

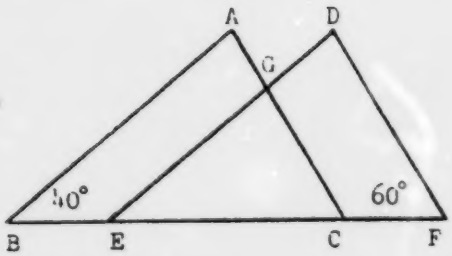
B 1,88 m

C 1,92 m

D 2,12 m

E 121,32 m

21.



Sur ce dessin, les triangles ABC et DEF sont congrus et BC = EF. Quelle est la mesure de l'angle EGC?

A 20°

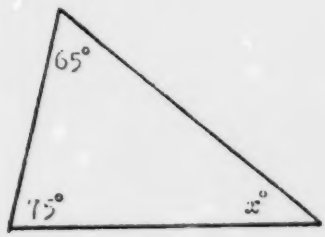
B 40°

C 60°

D 80°

E 100°

22.



x est égal à:

A 75

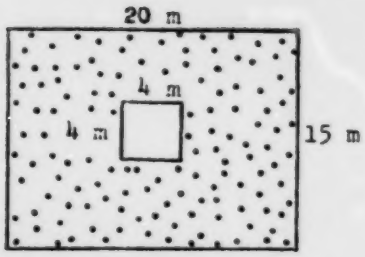
B 70

C 65

D 60

E 40

23.



De ce rectangle, on retire le carré comme indiqué. Quelle est l'aire de la partie restante?

A $316\ m^2$

B $300\ m^2$

C $284\ m^2$

D $80\ m^2$

E $16\ m^2$

24. On vend du papier au mètre carré. Sachant que $6\ m^2$ de papier coûtent \$4,80, trouver le prix de $16\ m^2$ de papier?

A \$12,80

B \$14,40

C \$28,80

D \$52,80

E \$128

25. La température au pied d'une montagne est de 31^oC. Au sommet, elle est de -7^oC. De combien la température est-elle plus élevée au pied de la montagne?

A -38^o

B -24^o

C 7^o

D 24^o

E 38^o

26. 0,40 x 6,38 est égal à:

A 0,2552

B 2,452

C 2,552

D 24,52

E 25,52

27. Un commerçant a x kg de thé en stock. Il en vend 15 kg et reçoit un nouveau lot de 2y kg. Combien de kg de thé a-t-il maintenant?

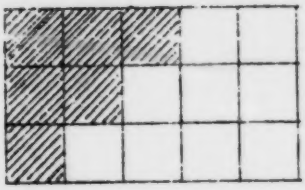
A $x - 15 - 2y$

B $x + 15 + 2y$

C $x - 15 + 2y$

D $x + 15 - 2y$

E Aucune de ces réponses

28. 

Sur la figure, les petits carrés ont tous la même taille. L'aire du rectangle entier étant égale à 1, l'aire de la partie hachurée est:

A $\frac{2}{15}$

B $\frac{1}{3}$

C $\frac{2}{5}$

D $\frac{3}{8}$

E $\frac{1}{2}$

29. La distance entre deux villes est habituellement mesurée en:

A millimètres

B centimètres

C décimètres

D mètres

E kilomètres

30. Le tableau ci-dessous donne la relation entre la hauteur (d) d'où une balle est lachée et la hauteur (b) jusqu'où elle rebondit.

d	50	80	100	150
b	25	40	50	75

Quelle formule décrit cette relation?

A $b = d^2$

B $b = 2d$

C $b = \frac{d}{2}$

D $b = d + 25$

E $b = d - 25$

31. $\frac{2}{5} + \frac{3}{8}$ est égal à:

A $\frac{5}{13}$

B $\frac{5}{40}$

C $\frac{6}{40}$

D $\frac{16}{15}$

E $\frac{31}{40}$

32. $7\frac{3}{20}$ est égal à:

A 7,03

B 7,15

C 7,23

D 7,3

E 7,6

33. Dans une école de 800 élèves, 300 sont des garçons. La proportion du nombre de garçons par rapport au nombre de filles est:

A 3 : 8

B 5 : 8

C 3 : 11

D 5 : 3

E 3 : 5

34. Le nombre 20 est égal à quel pourcentage de 80?

A 4%

B 20%

C 25%

D 40%

E Aucune de ces réponses

35. Par quelle inéquation se traduit la phrase suivante: "un nombre x, une fois diminué de 6, est inférieur à 12"?

A $x - 6 > 12$

B $x - 6 \geqslant 12$

C $x - 6 < 12$

D $6 - x \geqslant 12$

E $6 - x < 12$

36. 30 représente les 75% du nombre:

A 40

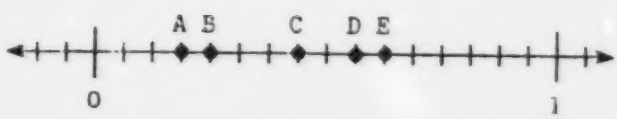
B 90

C 105

D 225

E 2250

37. Sur l'axe ci-dessous, le point correspondant à $\frac{5}{8}$ est:



A le point A

B le point B

C le point C

D le point D

E le point E

38. 20% de 125 est égal à:

A 6,25

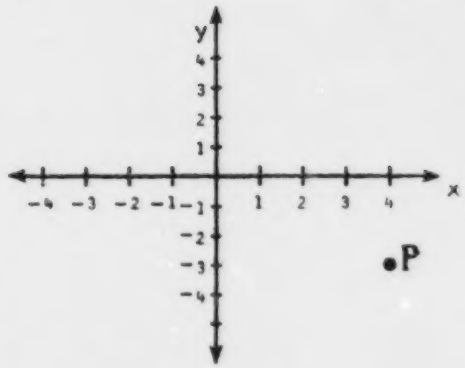
B 12,50

C 15

D 25

E 50

39.



Les coordonnées de P sont:

A (-3,4)

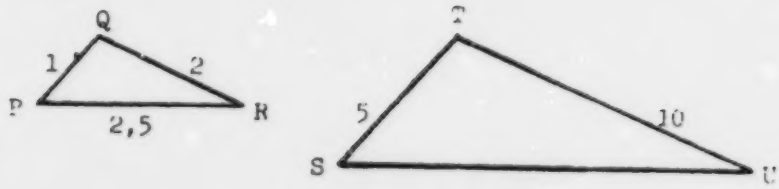
B (-4,-3)

C (3,4)

D (4,-3)

E (-4,3)

40.



Les triangles PQR et STU sont semblables. Quelle est la mesure du segment SU?

A 5

B 10

C 12,5

D 15

E 25

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SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE - DE MATHEMATIQUE

LIVRET 2LA

Institut d'études
pédagogiques de l' Ontario

1. Le quart d'un million est égal à:

A 25 250

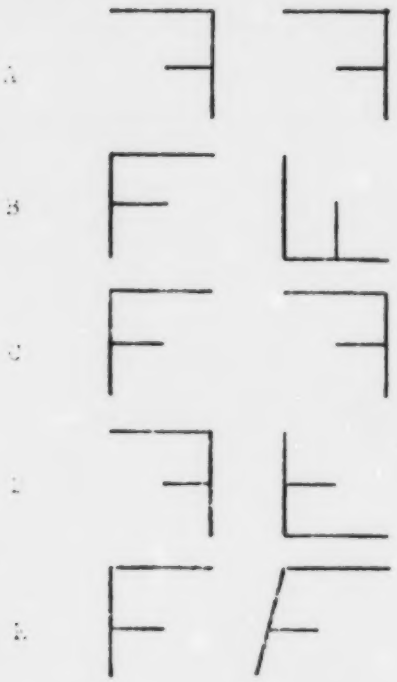
B 40 000

C $\frac{1}{4\ 000\ 000}$

D 250 000

E 2 500 000

2. Parmi les figures suivantes, quelles sont celles qui sont symétriques par rapport à une droite?



3. Quelle est l'approximation la plus proche de la valeur exacte du nombre: $5\frac{3}{7} + 6\frac{5}{8}$?

A à peu près 8

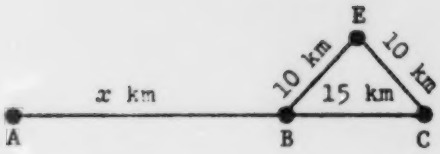
B à peu près 11

C à peu près 12

D à peu près 15

E à peu près 31

4.



Les Dupont font une excursion en automobile de A à C en passant par B. Puis ils reviennent à B en passant par E, et rentrent chez eux à A. Ils ont parcouru en tout 115 kilomètres. Quelle est la distance entre A et B?

A 20 km

B 35 km

C 40 km

D 75 km

E 80 km

5. Un nombre x est multiplié par lui-même puis le résultat est ajouté à 4 fois le nombre initial. Ce calcul s'exprime par:

A $x^2 + 4$

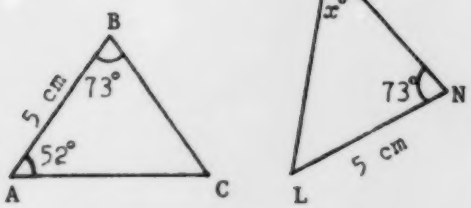
B $x + 4$

C $2x + 4$

D $x(x^2 + 4)$

E $x^2 + 4x$

6.



Les deux triangles illustrés ci-dessus sont congrus. Les segments LN et AB mesurent 5 cm. Quelle est la mesure de l'angle en M?

A 52°

B 55°

C 65°

D 73°

E 75°

7. Dans un ruban de un mètre de long, on coupe un morceau de 15 cm. Quelle est la longueur de la pièce restante?

A 85 cm

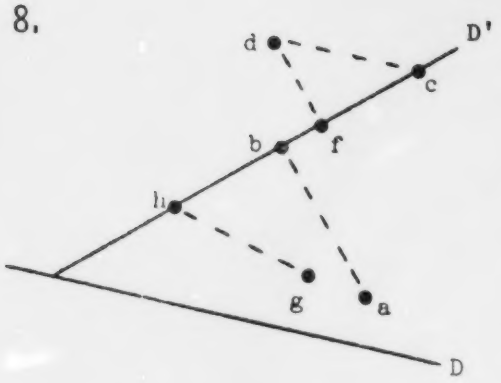
B 115 cm

C 985 cm

D 1015 cm

E 9985 cm

8.



D est la direction de projection et D' la droite sur laquelle on projette. Quelle est l'affirmation correcte?

A Projection de a = b

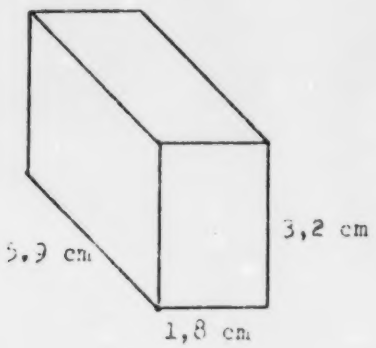
B Projection de d = c

C Projection de d = f

D Projection de g = h

E Projection de c = d

9.



La figure représente une boîte rectangulaire. Parmi ces nombres, quel est le plus proche du volume de la boîte?

A 16 cm^3

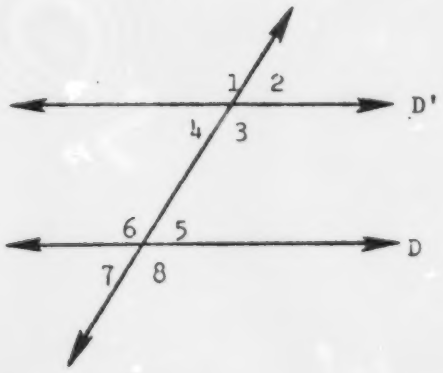
B 18 cm^3

C 28 cm^3

D 36 cm^3

E 48 cm^3

10.



Les droites D et D' sont parallèles. Deux angles dont la somme des mesures est 180° sont:

A angle n°1 et angle n°3

B angle n°4 et angle n°6

C angle n°2 et angle n°5

D angle n°2 et angle n°7

E angle n°1 et angle n°8

11. Sur cinq jeux, une équipe marque en moyenne 3 points par jeu. Combien a-t-elle totalisé de points sur ces 5 jeux?

A $\frac{3}{5}$

B $\frac{5}{3}$

C 3

D 5

E 15

12.

Notes	Comptage	nombre d'élèves
4	/	1
5	///	3
6	~~////~~/	6
7	//	2
8	////	4
9	///	3
10	/	1

Ce tableau donne la répartition des notes des élèves d'une classe à un devoir noté sur 10 points. Combien d'élèves de cette classe ont eu une note AU-DESSUS de 7?

A 2

B 8

C 10

D 12

E 20

13. $\frac{3}{8} - \frac{1}{5}$ est égal à:

A $\frac{1}{20}$

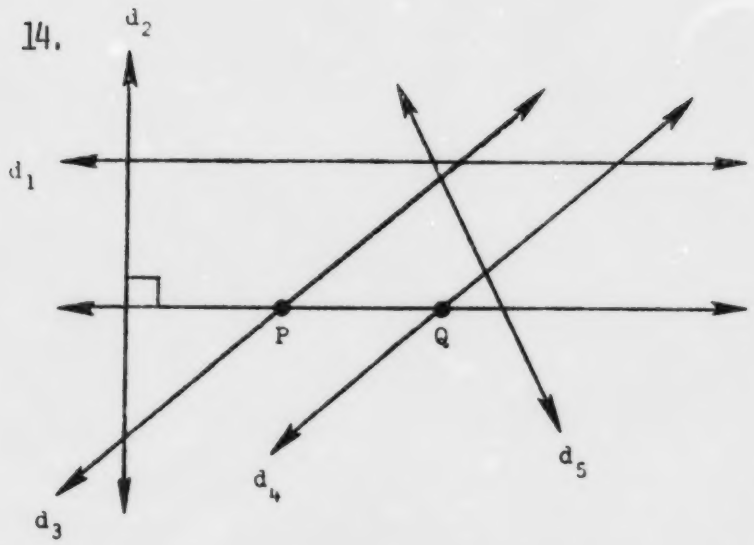
B $\frac{7}{40}$

C $\frac{7}{20}$

D $\frac{19}{40}$

E $\frac{2}{3}$

14.



Parmi les droites suivantes, d_1, d_2, d_3, d_4, d_5, laquelle n'a aucun point équidistant de P et de Q?

A d_1

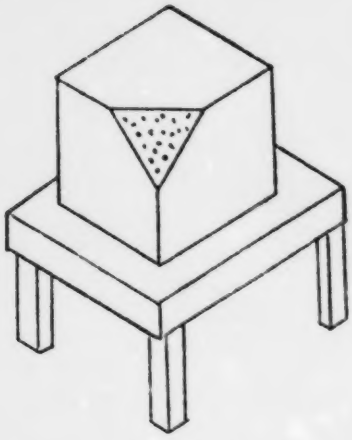
B d_2

C d_3

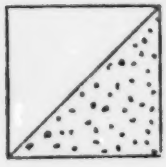
D d_4

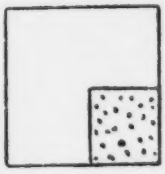
E d_5

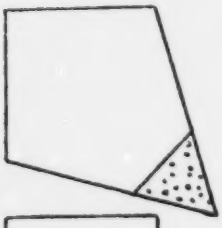
15.



Cette figure montre un cube dont un coin a été coupé et la découpe noircie. Que voit-on en regardant ce cube directement du dessus?

A 

B 

C 

D

E

16.

x	3	6	P
y	7	Q	35

Dans ce tableau, x est proportionnel à y. Quel sont les valeurs de P et Q?

A P = 14 et Q = 31

B P = 10 et Q = 14

C P = 10 et Q = 31

D P = 14 et Q = 15

E P = 15 et Q = 14

17.

1ère ligne	1
2ème ligne	1 - 1
3ème ligne	1 - 1 + 1
4ème ligne	1 - 1 + 1 - 1
5ème ligne	1 - 1 + 1 - 1 + 1

Quelle est la somme à la 50ème ligne?

A 0

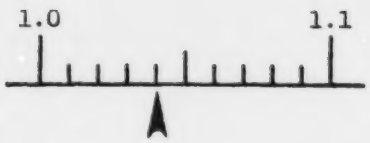
B 1

C 2

D 25

E 30

18.



Sur l'échelle, la flèche indique

A 1,004

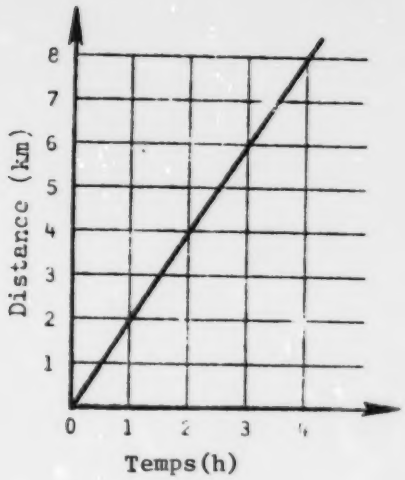
B 1,04

C 1,08

D 1,4

E 1,8

19.



Le graphique montre la distance parcourue par un tracteur en 4 heures. Quelle est sa vitesse?

A 1 km/h

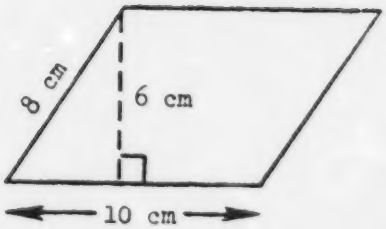
B 2 km/h

C 4 km/h

D 8 km/h

E Il n'y a pas assez d'informations

20.



L'aire du parallélogramme est égale à:

A 30 cm^2

B 36 cm^2

C 48 cm^2

D 60 cm^2

E 80 cm^2

21. $0{,}004 \overline{)\ 24{,}56}$

Le résultat de cette division est:

A 0,614

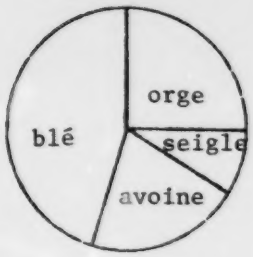
B 6,14

C 61,4

D 614

E 6140

22.



Ce diagramme en secteurs montre la proportion des récoltes des différentes céréales produites par un pays. Laquelle des proportions suivantes est VRAIE?

A On a produit plus d'avoine que de seigle

B La récolte d'orge est la plus importante

C Les récoltes d'orge et de blé sont égales

D La récolte d'avoine est la plus petite

E Les récoltes de blé et d'avoine réunies ne dépassent pas la moitié de la récolte totale

23. Un article coûte \$100. Son prix est d'abord augmenté de 10%, puis ce nouveau prix est diminué de 10%. Quel est le prix final de l'article?

A \$90

B \$99

C \$100

D \$101

E \$110

24. Si $10^2 \times 10^3 = 10^n$, alors n est égal à:

A 4

B 5

C 6

D 8

E 9

25. Une voiture met 15 min pour couvrir 10 km. Quelle est sa vitesse?

A 30 km/h

B 40 km/h

C 60 km/h

D 90 km/h

E 150 km/h

26. Si $x = -3$, alors $-3x$ est égal à:

A -9

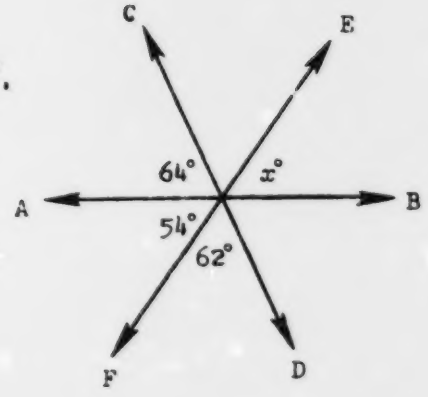
B -6

C -1

D 1

E 9

27.



Les droites AB, CD et EF sont concourantes et les mesures de certains angles sont indiquées sur la figure. x est égal à:

A 54

B 62

C 64

D 126

E 128

28. Quand $x = 2$, $\frac{7x + 4}{5x - 4}$ est égal à:

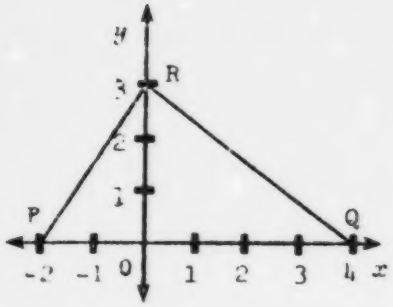
A 11

B 3

C $\frac{11}{5}$

D $\frac{9}{5}$

E $\frac{7}{5}$

29. 

Quelle est l'aire du triangle PQR?

A 3 unités d'aire

B 6 unités d'aire

C 9 unités d'aire

D 12 unités d'aire

E 18 unités d'aire

30. Quelle est la racine carrée de 12 x 75?

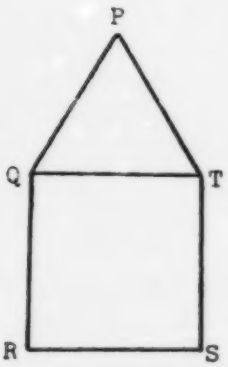
A 6,25

B 30

C 87

D 625

E 900

31. 

QRST est un carré et PQT un triangle équilatéral. Si PQ = 6 cm, quelle est l'aire du carré?

A 64 cm^2

B 48 cm^2

C 40 cm^2

D 36 cm^2

E 24 cm^2

32. Pierre et Paul décident de faire des économies. Chaque semaine Pierre peut économiser \$3 et Paul \$5. A ce rythme, combien faudra-t-il de semaines pour que Paul ait exactement \$10 de plus que Pierre?

A 2

B 3

C 4

D 5

E 8

33. 0,00046 est égal à:

A 46×10^{-3}

B $4,6 \times 10^{-4}$

C $0,46 \times 10^{3}$

D $4,6 \times 10^{4}$

E 46×10^{5}

34. Un des points suivants peut être relié par un segment qui NE coupe NI l'axe des x, NI l'axe des y au point de coordonnées (-3,4). Lequel?

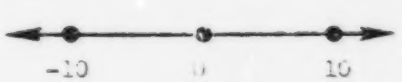
A (-2,3)

B (2,-3)

C (2,3)

D (-2,-3)

E (4,-3)

35. 

Quelle est la suite de nombres écrits dans le même ordre que les nombres de la droite numérique ci-dessus?

A $0, \frac{1}{2}, -1$

B $0, -1, \frac{1}{2}$

C $-1, -\frac{1}{2}, 0$

D $-1, 0, -\frac{1}{2}$

E $-\frac{1}{2}, -1, 0$

Association internationale pour
l'évaluation du rendement scolaire

SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE - DE MATHEMATIQUE

LIVRET 2LB

Institut d'études
pédagogiques de l' Ontario

1. 72% est égal à:

A 7200

B 720

C 72

D 7,2

E 0,72

2. Parmi les nombres suivants, lequel est égal à 37 milliers?

A 37 000

B 37

C 0,37

D 0,037

E 0,0037

3. Les pétales de 100 fleurs de différentes espèces sont soigneusement comptées et les résultats sont donnés dans ce tableau:

Nombre de pétales	Nombre de fleurs
10-12	5
13-15	22
16-18	48
19-21	18
22-24	7

Combien de fleurs ont MOINS de 19 pétales?

A 48

B 52

C 73

D 75

E 93

4. Dans un pays de 36 000 000 d'habitants il y a 7 000 000 de filles de moins de 21 ans. Si on représente la distribution de la population de ce pays par un diagramme en secteur, l'angle du secteur représentant les filles de moins de 21 ans aura pour mesure:

A 7^{o}

B 20^{o}

C 21^{o}

D 70^{o}

E 72^{o}

5.

m	-1	1	2	4
n	-1	3	5	9

Une formule peut relier m et n dans le tableau ci-dessus. C'est:

A $n = m$

B $n = 3m$

C $n = -m^2 + 1$

D $n = m^2 + 1$

E $n = 2m + 1$

6. La droite m est un axe de symétrie de la figure. La mesure de l'angle BCD est:

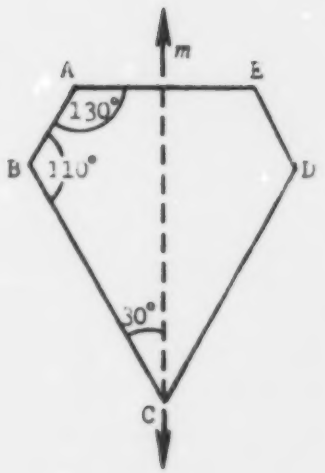
A 30^{o}

B 50^{o}

C 60^{o}

D 70^{o}

E 110^{o}



7. Ginette est allée de Cyrville à Orléans qui est à 3,1 km de là. Pendant sa promenade, elle a perdu sa montre et est revenue sur ses pas pendant 1,7 km pour la retrouver. Elle a repris alors sa première direction jusqu'à Orléans. Quelle est la distance que Ginette a parcourue en tout à son arrivée à Orléans?

A 1,4 km

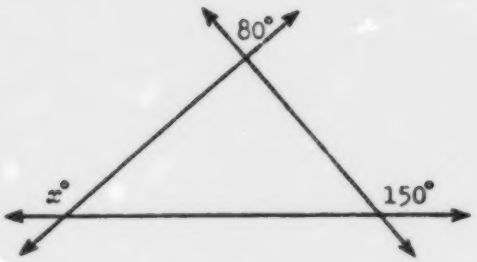
B 4,8 km

C 6,5 km

D 8,2 km

E Aucune de ces réponses

8.



Trois droites se coupent comme l'indique la figure. Quelle est la mesure x en degrés?

A 30

B 50

C 60

D 110

E 150

9. Jean a obtenu 78, 76 et 74 points à trois tests pendant que Marie obtenait 72, 82 et 74 points. Comparer les moyennes de Jean et de Marie.

A celle de Jean est supérieure d'un point

B celle de Jean est inférieure d'un point

C leurs moyennes sont égales

D celle de Jean est supérieure de 2 points

E celle de Jean est inférieure de 2 points

10. $\frac{3}{5} + \frac{2}{7}$ est égal à:

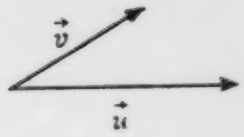
A $\frac{21}{10}$

B $\frac{5}{12}$

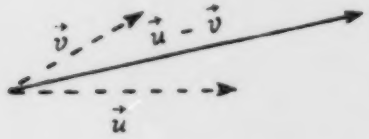
C $\frac{10}{21}$

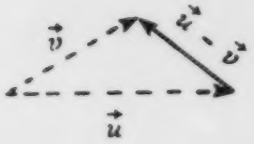
D $\frac{6}{35}$

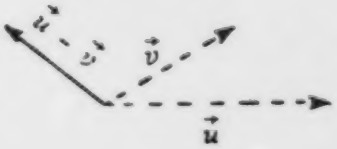
E $\frac{31}{35}$

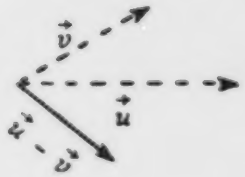
11. 

Si $\vec{u}$ et $\vec{v}$ sont deux vecteurs représentés par la figure ci-dessus, alors $\vec{u} - \vec{v}$ est représenté par:

A 

B 

C 

D 

E

12. Si $6x - 3 = 15$

alors $6x = 15 - 3$ (1)

et $6x = 12$ (2)

et $x = \frac{12}{6}$ (3)

et $x = 2$ (4)

La PREMIERE ERREUR dans le raisonnement ci-dessus apparait à la ligne:

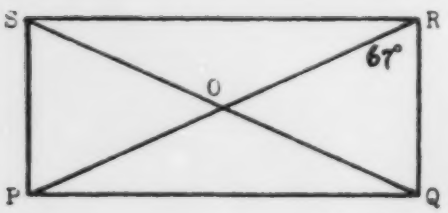
A (1)

B (2)

C (3)

D (4)

E Il n'y a pas d'erreur

13. 

Dans ce rectangle, la mesure de l'angle ROQ est:

A 23°

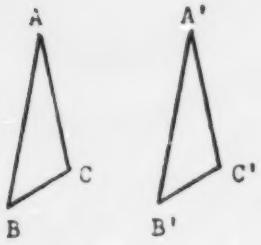
B 45°

C 46°

D 54°

E 67°

14.



Les triangles ABC et A'B'C' sont congrus et leurs côtés correspondants sont parallèles. Le triangle ABC est transformé en A'B'C' par:

A symétrie axiale

B symétrie glissée

C rotation

D homothétie

E tanslation

15. Parmi les opérations suivantes sur des nombres entiers, quelles sont celles qui donnent TOUJOURS un nombre entier?

I Addition
II Multiplication
III Division

A I seulement

B II seulement

C III seulement

D I et II seulement

E II et III seulement

16. $2^3 \times 3^2$ est égal à:

A 30

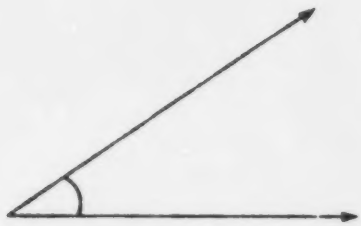
B 36

C 64

D 72

E Aucun de ces résultats

17.



Le nombre le plus proche de la mesure de cet angle est:

A 155^o

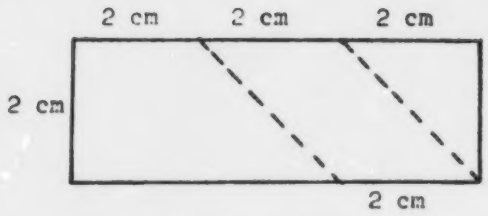
B 145^o

C 50^o

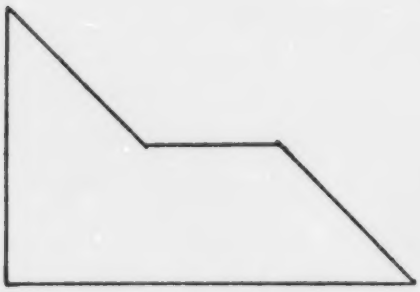
D 35^o

E 15^o

18.



Le rectangle ci-dessus est coupé selon les lignes pointillées et les trois morceaux sont juxtaposés sans se recouvrir pour donner la figure ci-dessous.



L'aire en centimètres carrés de cette figure est:

A $8\ cm^2$

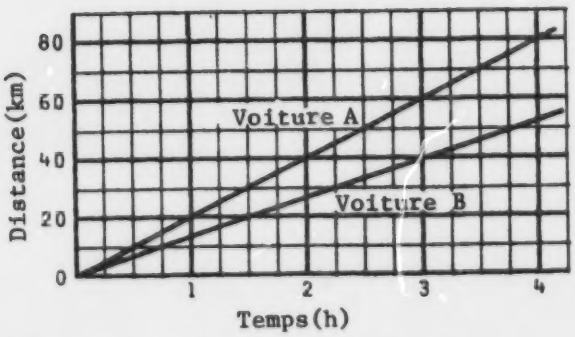
B $10\ cm^2$

C $12\ cm^2$

D $14\ cm^2$

E $16\ cm^2$

19.



Utilisez le graphique ci-dessus pour répondre à la question suivante.

Pour faire 50 km, combien de temps la voiture B met-elle de plus que la voiture A?

A 1 h 15 min

B 1 h 30 min

C 2 h

D 2 h 30 min

E 2 h 35 min

20. Lequel des nombres suivants est un nombre premier?

A 21

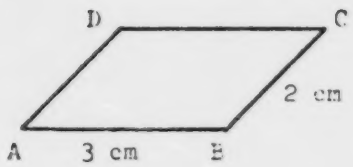
B 22

C 23

D 24

E 25

21.



Sur la figure, on a: AB//DC et AD//BC. Le quadrilatère ABCD est un:

A losange

B parallélogramme

C carré

D rectangle

E aucun de ceux-ci

22. Trouver la valeur de N.

$N = 10^3 + 10^1 + 10^0 + 10^{-2}$

A N = 0

B N = 20

C N = 1011,01

D N = 100

E Une autre valeur

23. Il y a 300 kJ dans 100 g d'une certaine denrée. Combien y en a-t-il dans 30 g de cette denrée?

A 90 kJ

B 100 kJ

C 900 kJ

D 1000 kJ

E 9000 kJ

24. Simplifier:
$5x + 3y + 2x - 4y$

A $7x + 7y$

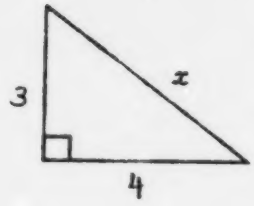
B $8x - 2y$

C $6xy$

D $7x - y$

E $7x + y$

25.



Parmi les équations suivantes, quelle est celle qui peut être écrite pour le triangle ci-dessus?

A $x^2 = 3^2 + 4^2$

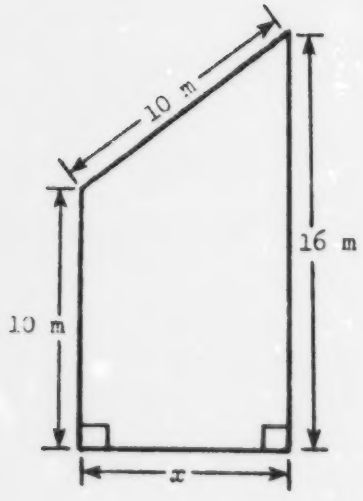
B $x^2 + 3^2 = 4^2$

C $x^2 = 4^2 - 3^2$

D $x^2 = 4^2 - 3^2$

E $x = 4 + 3$

26.



x est égal à:

A 4 m

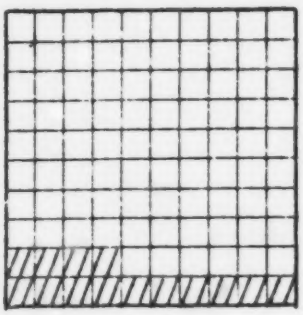
B 6 m

C 8 m

D 10 m

E 12 m

27.



L'aire du grand carré est de 1 unité de surface. Quelle est l'aire de la partie de la partie hachurée?

A 14 unités d'aire

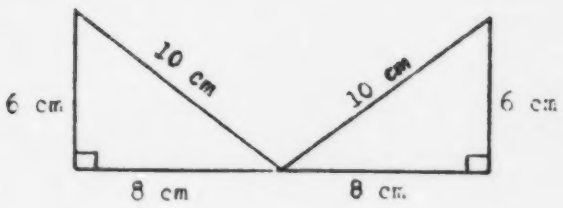
B 1,4 unités d'aire

C 0,14 unités d'aire

D 0,014 unités d'aire

E 0,0014 unités d'aire

28.



La somme des aires des deux triangles est:

A $6 \times 8\ cm^2$

B $\frac{6 \times 8}{2}\ cm^2$

C $\frac{10 \times 6}{2}\ cm^2$

D $\frac{16 \times 12}{2}\ cm^2$

E $\frac{20 \times 12}{2}\ cm^2$

29. Si y dollars sont également partagés entre quatre enfants, quelle est, en dollars, la part de chacun?

A $y - 4$

B $\frac{4}{y}$

C 4

D $\frac{y}{4}$

E $4y$

30. $(-6) - (-8)$ est égal à:

A 14

B 2

C -2

D -10

E -14

31. On mesure la longueur d'une boîte et on trouve, AU CENTIMETRE LE PLUS PROCHE, 9 cm. Mesurée avec des moyens plus précis, quelle peut être la longueur de cette boîte?

A 10 cm

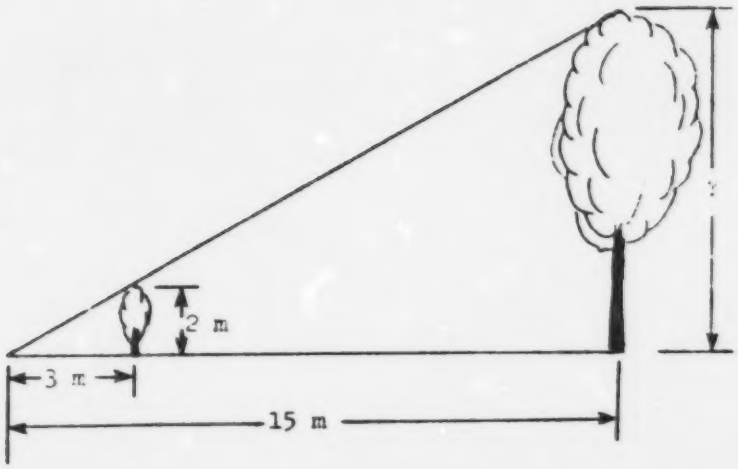
B 9,9 cm

C 9,62 cm

D 9,6 cm

E 8,6 cm

32.



Le dessin ci-dessus montre comment Pierre utilise le petit arbre pour trouver la hauteur du grand. Quelle hauteur va-t-il trouver?

A 10 m

B 12 m

C 14 m

D 17 m

E 20 m

33. $\sqrt{75}$ est entre

A 4 et 5

B 5 et 6

C 6 et 7

D 7 et 8

E 8 et 9

34. (22 x 18) - (47 + 59) est égal à:

A 290

B 300

C 384

D 408

E 502

35. Il y a 35 élèves dans une classe. $\frac{1}{5}$ d'entre eux vont à l'école en autobus, $\frac{2}{5}$ y vont en bicyclette. Combien d'élèves vont à l'école par d'autres moyens?

A 7

B 14

C 21

D 28

E 35

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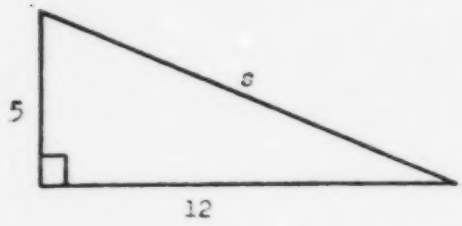
SECONDE ENQUETE INTERNATIONALE SUR L' ENSEIGNEMENT DES MATHEMATIQUES

HUITIEME ANNEE
QUESTIONNAIRE - DE MATHEMATIQUE

LIVRET 2LC

Institut d'études
pédagogiques de l' Ontario

1.



s est égal à:

A 7

B 13

C 15

D 17

E Aucune des réponses

2. Parmi les nombres suivants, celui qui se rapproche le plus de la masse d'un homme normal est:

A 8,5 kg

B 85 kg

C 185 kg

D 850 kg

E 1850 kg

3. Quelle est la paire de fractions égales?

A $\frac{5}{8}$ et $\frac{2}{3}$

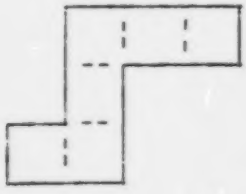
B $\frac{5}{6}$ et $\frac{2}{3}$

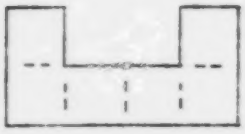
C $\frac{4}{5}$ et $\frac{14}{15}$

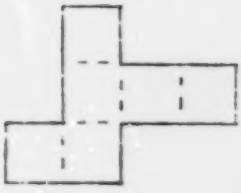
D $\frac{3}{5}$ et $\frac{9}{15}$

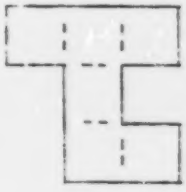
E $\frac{1}{2}$ et $\frac{14}{24}$

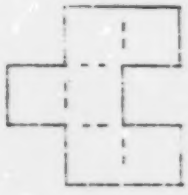
4. Parmi les formes suivantes, laquelle peut être utilisée pour fabriquer un cube, en pliant suivant les pointillés?

A 

B 

C 

D 

E 

5. $1\frac{2}{5} - \frac{1}{2}$ est égal à:

A $\frac{2}{3}$

B $\frac{9}{10}$

C $1\frac{1}{10}$

D $1\frac{1}{7}$

E $1\frac{1}{3}$

6. Il y a 5 boutons noirs et un bouton rouge dans une urne. Si vous tirez un bouton de l'urne, quelle est la probabilité d'avoir le bouton rouge?

A 0

B $\frac{1}{6}$

C $\frac{1}{5}$

D $\frac{5}{6}$

E 1

7. Vous voulez connaître la popularité d'une boisson gazeuse SPLASH dans votre école. La meilleure façon de s'y prendre pour que vous soyez pratiquement sûr de vos résultats est de:

A Compter le nombre de bouteilles vides de SPLASH dans les poubelles

B Demander au responsable combien de caisses de SPLASH il a commandé le mois précédent

C Demander à vos amis s'ils pensent que SPLASH est la boisson qui est la plus appréciée

D Demander au livreur de boissons gazeuses ce qu'il pense de SPLASH

E Remplir un tableau par marque, des ventes de boisons gazeuses dans l'école au cours d'une semaine

8. Un groupe d'enfants a été divisé en 7 équipes comprenant neuf enfants chacune. Par la suite, le même groupe a été divisé en équipes de 7 enfants chacune. Combien d'équipes ont donc été formées?

A 7

B 8

C 9

D 16

E 63

9. Si deux triangles sont SEMBLABLES, quelle proposition est toujours vraie?

A Leurs angles correspondants doivent être égaux

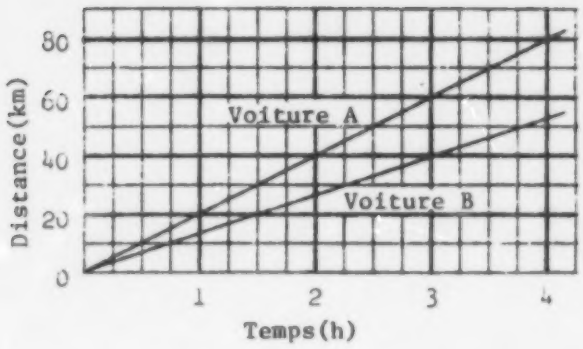
B Leurs côtés correspondants doivent être égaux

C Leurs côtés correspondants doivent être parallèles

D Ils doivent avoir la même aire

E Ils doivent avoir même forme et même taille

10.



Utilisez le graphique ci-dessus pour répondre à la question suivante:

3 heures après le départ, de combien de kilomètres la voiture A devance-t-elle la voiture B?

A 2

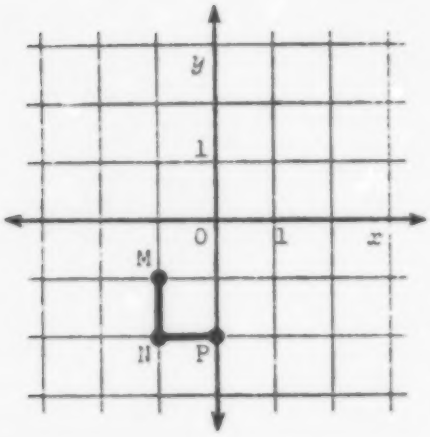
B 10

C 15

D 20

E 25

11.



Partant du point M(-1,-1), on se déplace vers le point N(-1,-2), on fait un pas à gauche et on arrive en P(0,-2). En faisant à nouveau un pas à gauche, on arrive au point de coordonnées:

A (1,-2)

B (0,-3)

C (0,-1)

D (-1,-2)

E Aucun de ces points

12. Le prix d'impression de cartes de voeux comprend un prix fixe de 100 cents puis un supplément de 6 cents pour chaque carte imprimée. Laquelle des équations suivantes peut-on utiliser pour le calcul du prix de n cartes?

A prix = (100 + 6n) cents

B prix = (106 + n) cents

C prix = (6 + 100n) cents

D prix = (106n) cents

E prix = (600n) cents

13. "Six fois un certain nombre (appelons le q) est égal à la somme de 8 et du double de ce nombre". Ceci peut s'écrire:

A $6q = 2(8 + q)$

B $6(q + 8) = 2q$

C $6(q + 8) = 8 + 2q$

D $6q = 8 + 2q$

E $q = 1$

14. Dans une élection, le candidat A a obtenu 70% des voix. Sachant que 4200 personnes ont voté lors de cette élection, combien de voix a-t-il obtenues?

A 2800

B 2900

C 2940

D 3000

E 4130

15. Quel est le volume d'un récipient cubique de 10 cm de côté:

A 1 L

B 10 L

C 100 L

D 1000 L

E 1000 cm

16. Si $x = y = z = 1$ alors $\frac{x - z}{x + y}$ est égal à:

A -2

B -1

C 0

D $\frac{1}{2}$

E 1

17. Michel a un grand nombre de cubes de 1 cm de côté. Quel est le nombre maximum de cubes que Michel peut mettre dans une boîte rectangulaire dont les dimensions sont: 10 cm de long, 10 cm de large et 7 cm de haut?

A 27

B 70

C 140

D 280

E 700

18. Si le rapport de 2 à 5 est égal au rapport de n à 100, alors n est égal à:

A 10

B 20

C 40

D 150

E 250

19. Une cloche sonne toutes les 8 minutes, une autre cloche sonne toutes les 12 minutes. Elles sonnent ensemble à midi. Au bout de combien de minutes sonneront-elles pour la première fois, à nouveau ensemble?

A 8

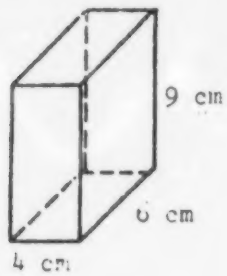
B 12

C 20

D 24

E 96

20. L'AIRE DE LA SURFACE de cette boîte rectangulaire est:



A $50\ cm^2$

B $100\ cm^2$

C $114\ cm^2$

D $216\ cm^2$

E $228\ cm^2$

21. $3{,}23 \times 10^5$ est égal à:

A 0,000 032 3

B 3,230 00

C 32 300

D 323 000

E 32 300 000

22. La vitesse du son est d'environ 340 m/s. Combien de temps faut-il pour entendre le son du klaxon d'une automobile qui est à 714 m de là?

A 0,21 s

B 2,1 s

C 21 s

D 210 s

E Aucune de ces réponses

23. Pour qu'un quadrilatère soit un parallélogramme, il faut qu'il ait:

A deux côtés adjacents de longueurs égales

B deux côtés parallèles de longueurs égales

C une diagonale comme axe de symétrie

D deux angles adjacents égaux

E ses côtés parallèles deux à deux

24. Parmi les égalités suivantes, quelle est celle qui est FAUSSE lorsque a, b, et c sont des nombres réels différents?

A $(a + b) + c = a + (b + c)$

B $ab = ba$

C $a + b = b + a$

D $(ab)c = a(bc)$

E $a - b = b - a$

25. Si le nombre 74,236 est arrondi au centième le plus proche, quelle valeur obtient-on?

A 74,2

B 74,3

C 74,23

D 74,24

E 74,240

26. Une boule de quilles parcourt 4 m/s. La distance parcourue en t secondes est donnée par $d = 4t$. Dans ce tableau, x est égal à:

t	d
0	0
1	4
2	8
3	x
4	16

A 6

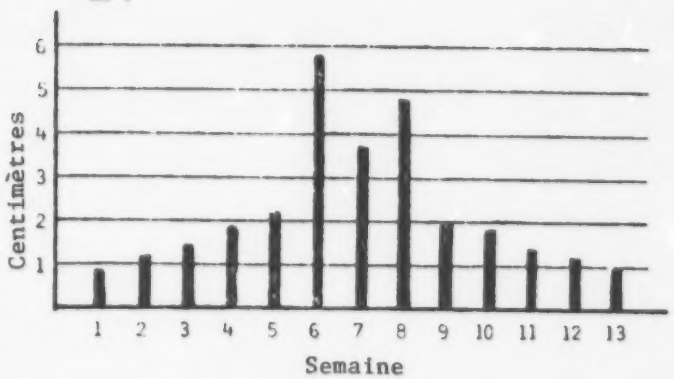
B 10

C 12

D 14

E Aucune des réponses précédentes

27.



Sur ce graphique, la hauteur de pluie en centimètres est relevée pendant 13 semaines. La hauteur moyenne de pluie tombée par semaine durant cette période est d'environ:

A 1 cm

B 2 cm

C 3 cm

D 4 cm

E 5 cm

28. 162 x 45 est égal à:

A 1378

B 1458

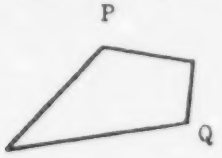
C 5890

D 6290

E 7290

29. Si l'on dessine le segment PQ sur chacune des figures ci-dessous, l'une d'elles sera partagée en deux triangles congruents. Laquelle?

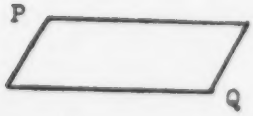
A



B

C

D



E

30. La moyenne arithmétique de: 1,50; 2,40; 3,75 est égale à:

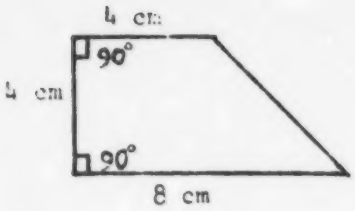
A 2,40

B 2,55

C 3,75

D 7,65

E Aucune de ces réponses

31. 

La figure montre la forme et les dimensions d'une plaque de laiton. Quelle est son aire en centimètres carrés?

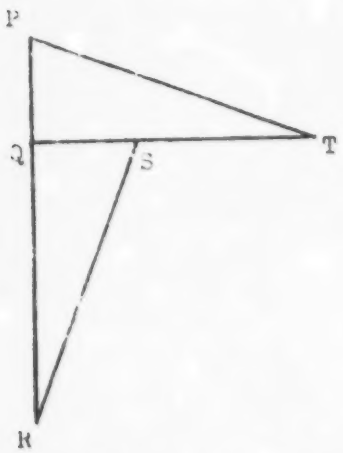
A 16

B 24

C 32

D 64

E 96

32. 

Le triangle PQT se transforme par rotation en SQR. Le centre de rotation est:

A le point P

B le point Q

C le point R

D le point S

E le point T

33. Si $4 \times 9 = 36$, $\sqrt{36}$ est égal à:

A 4×9

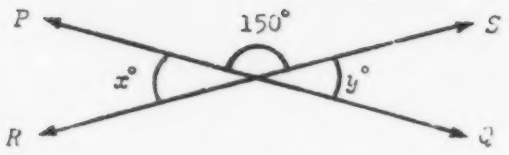
B 4×3

C 2×9

D 2×3

E $\sqrt{2} \times \sqrt{3}$

34.



Sur cette figure, les droites PQ et RS sont sécantes. x + y est égal à:

A 15

B 30

C 60

D 180

E 300

35. $\frac{a}{15} - \frac{b}{5}$ est égal à:

A $\frac{a - 3b}{15}$

B $\frac{5a - 15b}{15}$

C $\frac{a - b}{10}$

D $\frac{a - b}{75}$

E Aucun de ces nombres

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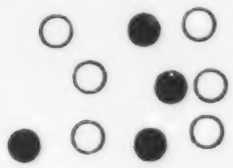
1. Le schéma montre un certain nombre de billes noires et blanches. Quelle est la proportion de billes blanches dans l'ensemble des billes?



A $\frac{1}{2}$

B $\frac{6}{4}$

C $\frac{4}{6}$

D $\frac{6}{10}$

E $\frac{4}{10}$

2. Quel est le volume d'une boîte rectangulaire dont les dimensions intérieures sont 10 cm de long, 10 cm de large et 7 cm de haut?

A $27\ cm^3$

B $70\ cm^3$

C $140\ cm^3$

D $280\ cm^3$

E $700\ cm^3$

3. Un coureur parcourt 3000 m en 8 minutes exactement. Quelle est sa vitesse moyenne en mètres par secondes?

A 3,75

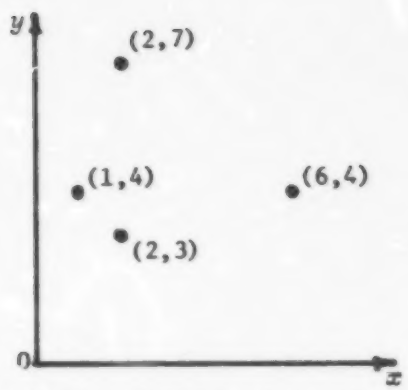
B 6,25

C 16,0

D 37,5

E 62,5

4.



La droite joignant les points de coordonnées (2,3) et (2,7) coupe la droite joignant les points de coordonnées (1,4) et (6,4) au point de coordonnées:

A (4,2)

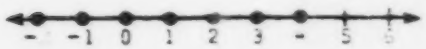
B (1,4)

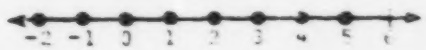
C (1,3)

D (2,3)

E (2,4)

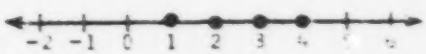
5. Dans l'un des schémas ci-dessous, les points représentent l'ensemble des nombres **entiers** strictement inférieurs à 5. Lequel?

A 

B 

C

D

E 

6. Quelles sont les égalités vraies?

I $(53 \times 73) \times 17 = 53 \times (73 \times 17)$

II $133 \times (78 + 89) = (133 \times 78) + 89$

III $133 \times (78 + 89) = (133 \times 78) + (133 \times 89)$

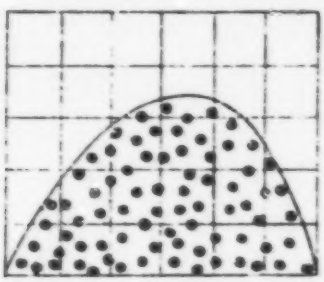
A I seulement

B II seulement

C III seulement

D I et II seulement

E I et III seulement

7. 

Chacun des petits carrés de la figure mesure une unité d'aire. Quelle est la meilleure estimation de la partie ombragée?

A 10 unités d'aire

B 12 unités d'aire

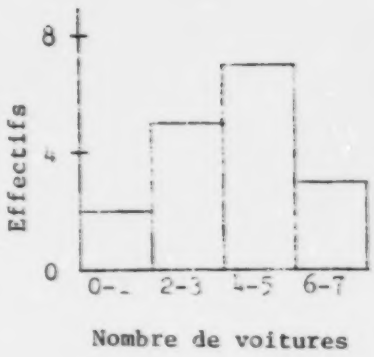
C 14 unités d'aire

D 16 unités d'aire

E 18 unités d'aire

8. Le tableau et le graphique ont été établis avec les mêmes données

Nombre de voitures	Effectifs
0 ou 1	2
2 ou 3	x
4 ou 5	7
6 ou 7	3



x est égal à:

A 2

B 3

C 4

D 5

E 6

9. A quelle fraction de l'aire du grand cercle, l'aire du cercle hachuré est-elle égale?

A $\frac{1}{6}$

B $\frac{1}{5}$

C $\frac{1}{4}$

D $\frac{1}{3}$

E $\frac{1}{2}$

10. Trouver la somme:

3 semaines et 5 jours
+ 9 semaines et 6 jours

A 12 semaines et 1 jour

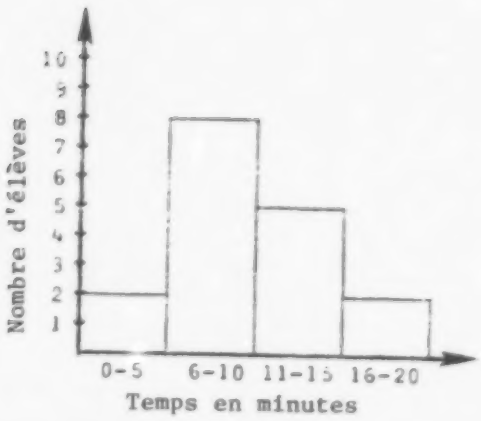
B 12 semaines et 4 jours

C 13 semaines et 1 jour

D 13 semaines et 4 jours

E 13 semaines et 11 jours

11.



Ce graphique indique la durée de transport des élèves entre la maison et l'école. Combien d'élèves ont PLUS de 10 minutes de trajet?

A 2

B 5

C 7

D 8

E 15

12. Des allumettes sont disposées ainsi:

Si on continue de la même façon, combien d'allumettes faudra-t-il pour faire la 10ième figure?

A 30

B 33

C 36

D 39

E 42

13. $\begin{array}{r} 1054 \\ -\ 865 \end{array}$

A 189

B 199

C 211

D 289

E 299

14. Dans une école, il y a 3 candidats à une élection. Jean recueille 120 voix, Marie 50 et Georges 30. Quel est le pourcentage du nombre total de voix recueillies par Jean?

A $\frac{6}{10}\%$

B 40%

C 60%

D 80%

E 120%

15. Sur un sol bien plat, un enfant haut de 5 unités projette une ombre longue de 3 unités. Au même moment, un poteau télégraphique tout proche qui est haut de 45 unités projette une ombre qui, dans cette unité, a pour longueur:

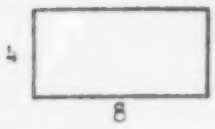
A 24

B 27

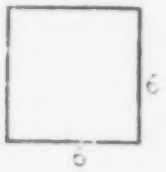
C 30

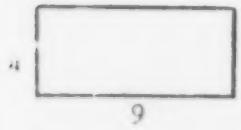
D 60

E 75

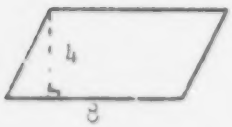


16. L'une des figures ci-dessous est congruente à la figure ci-dessus. Laquelle?

A 

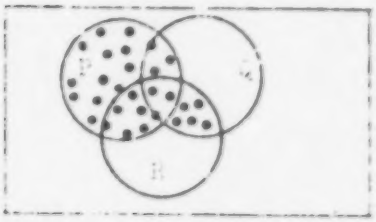
B 

C

D 

E

17. On note $P \cap Q$ l'intersection des ensembles P et Q et $P \cup Q$ l'union des ensembles P et Q. Sur le dessin, la partie hachurée représente:



A $(P \cap Q) \cup R$

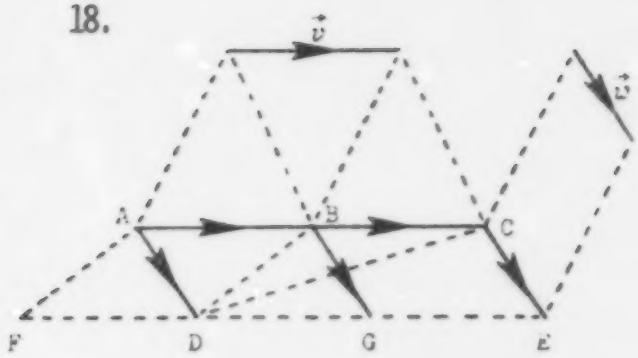
B $P \cup (Q \cap R)$

C $P \cap (Q \cup R)$

D $(P \cap Q) \cap R$

E $(P \cup Q) \cap R$

18.



Etant donnés les vecteurs $\vec{v}$ et $\vec{w}$ tels qu'illustrés ci-dessus, à quoi est égal le vecteur $\overrightarrow{DB}$?

A $\vec{v} + \vec{w}$

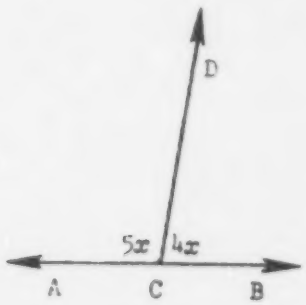
B $\vec{v} - \vec{w}$

C $\vec{w} - \vec{v}$

D $-\vec{w} - \vec{v}$

E $\vec{v} + 2\vec{w}$

19.



Si AB est une droite, quelle est la mesure en degrés de l'angle BCD?

A 20

B 40

C 50

D 80

E 100

20. Quelle est l'égalité vraie pour tout n?

A $2 + n = n + 2$

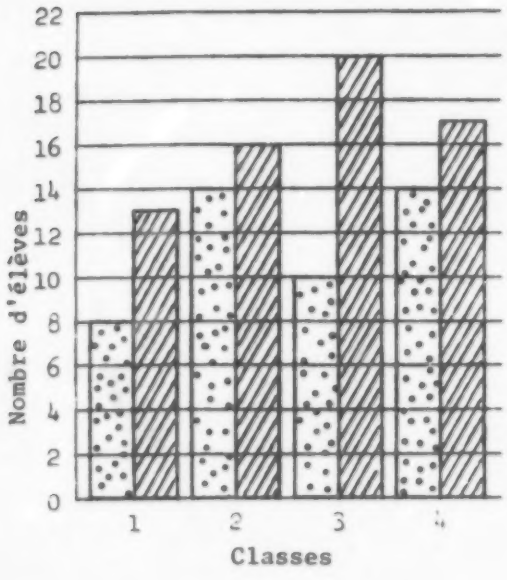
B $3 + n = 4 + 2$

C $n + 1 = 1$

D $2n + 1 = n$

E $n + 3 = 3n$

21. Elèves dans les classes de 1e, 2e, 3e, 4e



A partir des informations du graphique, quelle est la proposition VRAIE?

A La classe de 2e est la moins nombreuse

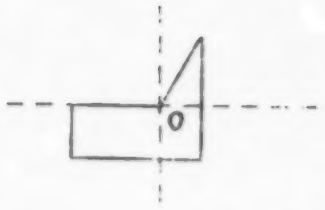
B Les classes de 2e et 4e ont le même nombre d'élèves

C En 3e, il y a deux fois plus de garçons que de filles

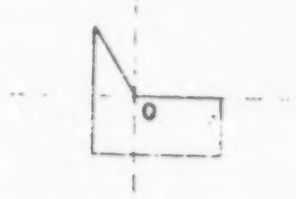
D En 4e, il y a plus de filles que de garçons

E Il y a autant de garçons en le que de filles en 4e.

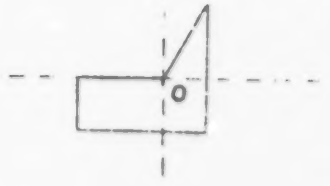
22.

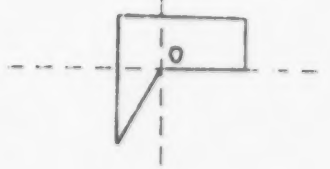


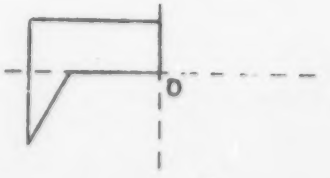
Après avoir effectué une rotation de 180° autour du point O, la figure ci-dessus est transformée en:

A 

B

C 

D 

E 

23. Combien de tuyaux de 20 m faut-il utiliser pour construire une conduite de 1 kilomètre de long?

A 5

B 50

C 500

D 5000

E 50 000

24. Dans un quadrilatère, deux des angles mesurent 110°, un troisième mesure 90°. Quelle est la mesure du quatrième angle?

A 50°

B 90°

C 130°

D 140°

E Aucune d'elles

25. $\frac{1}{2} \times \frac{1}{4}$ est égal à:

A $\frac{1}{8}$

B $\frac{1}{6}$

C $\frac{2}{8}$

D $\frac{2}{4}$

E 8

26. $\frac{x}{2} < 7$ est équivalent à:

A $x < \frac{7}{2}$

B $x < 5$

C $x < 14$

D $x > 5$

E $x > 14$

27. Une eau gazeuse coûte a cents la bouteille; on remet b cents pour chaque bouteille vide rapportée. Combien Henri devra-t-il payer s'il achète x bouteilles et s'il en rapporte y vides?

A ax + by cents

B ax - by cents

C (a - b)x cents

D (a + x) - (b + y) cents

E Aucune de ces réponses

28. 7 x (3 + 9) est égal à:

A (7 x 3) + (7 x 9)

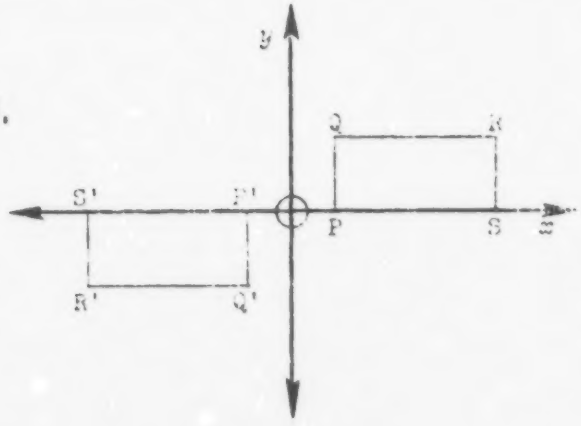
B (7 x 9) + (3 x 9)

C (7 x 3) + (3 x 9)

D 7 x 27

E 21 + 9

29.



Sur le dessin, PQRS est un rectangle, et son image par une transformation est le rectangle P'Q'R'S'. Cette transformation est:

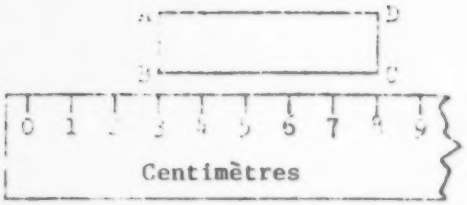
A une rotation autour de l'origine

B une symétrie d'axe y

C une translation parallèlement à l'axe x

D une symétrie d'axe x

E une translation parallèlement à l'axe y

30. 

Sur ce dessin, la mesure du côté BC du rectangle ABCD est (au centimètre le plus proche):

A 5 cm

B 6 cm

C 7 cm

D 8 cm

E 9 cm

31. $-5(6 - 4)$ est égal à:

A 50

B 26

C 10

D -10

E -26

32. La somme de \$150 est divisée en 2 parts, dans un rapport de 2 à 3. Quel est le montant de la plus petite de ces parts?

A \$30

B \$50

C \$60

D \$90

E \$120

33. 847,36

Dans le nombre encadré, le 6 représente:

A $6 \times \frac{1}{100}$

B $6 \times \frac{1}{10}$

C 6×1

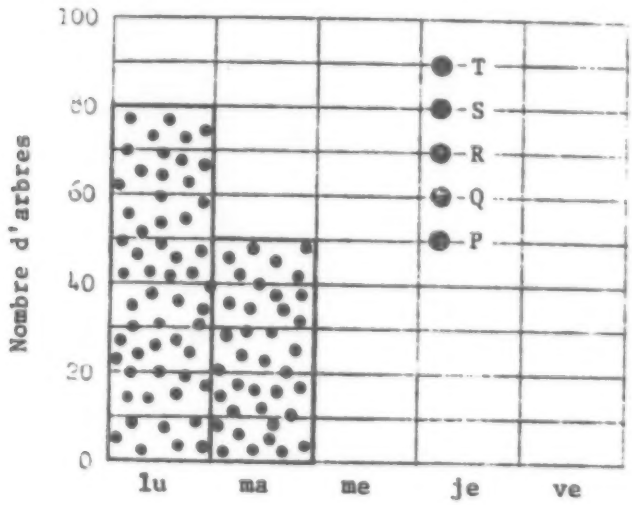
D 6×10

E 6×100

34. Ce tableau indique le nombre d'arbres plantés le long d'une autoroute pendant une semaine.

Jours de la semaine	lu	ma	me	je	ve
Nombre d'arbres plantés	80	50	60	90	75

Sur le graphique ci-dessous sont notées les plantations des deux premiers jours.



Si on complète le graphique, quel est le point qui indique le niveau pour le Jeudi?

A P

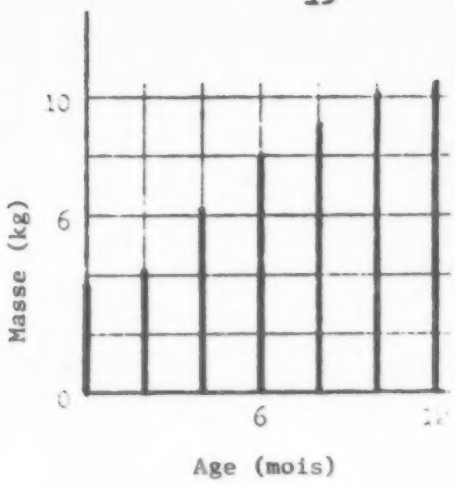
B Q

C R

D S

E T

35.



Le gain de masse d'un enfant entre 6 et 10 mois est de:

A 1 kg

B 2 kg

C 4 kg

D 6 kg

E 8 kg

Appendix IV

Hanna, G. & LaDouceur, A. Les bias dans les traductions françaises des tests de la seconde enquête internationale sur l'enseignement des mathématiques. *For the Learning of Mathematics 6, 4,* **June 1986, 29-41.**

Les biais dans les traductions françaises des tests de la seconde enquête internationale sur l'enseignement des mathématiques

GILA HANNA, ANDRE LADOUCEUR

Introduction

L'interprétation des résultats d'un test administré dans plusieurs langues et dans plusieurs pays exige beaucoup de soin. Cette communication a pour but de montrer qu'il est nécessaire de faire examiner les versions d'un test par des juges experts dans le but d'éviter des biais causés par des différences dans le niveau du langage, la clarté, le sens et la présentation typographique des items, ainsi que des différences dans les processus cognitifs suscités par les versions linguistiques des items.

Seconde enquête internationale sur l'enseignement des mathématiques

Dans la seconde enquête internationale sur l'enseignement des mathématiques, des tests ont été administrés en quelque 10 langues à des élèves de 8e et de 12e année dans 24 pays. Deux provinces du Canada, l'Ontario et la Columbie-Britannique, ont participé à titre de "pays". Cette enquête avait pour buts

- d'étudier le genre de mathématiques enseignées dans les pays participants,
- de comparer les façons d'enseigner les mathématiques,
- d'étudier les effets de cet enseignement sur l'apprentissage des mathématiques et sur l'attitude des élèves envers cette matière.

[Robitaille, O'Shea, Dirks, 1982]

Les participants ont d'abord comparé les curriculums prescrits en examinant les structures des systèmes scolaires, les buts curriculaires, la formation des enseignants, les manuels et les ressources pédagogiques. Pour comparer les curriculums tels qu'ils sont mis en oeuvre, les chercheurs ont recueilli des données sur les conceptions que les enseignants se font des mathématiques, ainsi que sur leurs priorités et sur leurs méthodes d'enseignement. Enfin, pour comparer les curriculums tels qu'ils sont atteints, les chercheurs ont utilisé des questionnaires mesurant le rendement des élèves en mathématiques et leur attitudes envers les mathématiques. Deux populations d'élèves ont été utilisées pour ces mesures: la population A, correspondant aux élèves de 8e année et la population B correspondant aux élèves de 12e année. On trouvera une description plus détaillée de ces trois composantes et des deux populations de l'étude dans Robitaille, O'Shea, Dirks [1982].

On ne saurait comparer les résultats bruts du rendement des élèves sans tenir compte de l'occasion d'apprendre, c'est-à-dire de la relation entre le curriculum et l'enseignement reçu. Or de telles comparaisons ont déjà été publiées sous forme graphique dans McLean, Raphael et Wahlstrom [1983] et dans McKnight et al. [1985].

Biais dans les items

Ces comparaisons ont mené les auteurs à examiner la question des biais dans les tests polyglottes. Les chercheurs qui participent à la seconde enquête internationale sur l'enseignement des mathématiques ont tenté d'éliminer les biais causés par la traduction des items en procédant à une traduction vers une langue et à une retraduction indépendante vers la langue d'origine pour ensuite comparer la version originale et la version finale.

Les auteurs suggèrent que pour assurer la validité de la comparaison des résultats, il est nécessaire, en plus, de comparer les versions linguistiques de chaque item quant au niveau du langage employé, à leur clarté, à leur présentation typographique et aux processus cognitifs impliqués. Ils ont examiné les versions française et anglaise des questionnaires de l'Ontario pour la seconde enquête internationale sur l'enseignement des mathématiques. La version française, la même que celle utilisée en France, à l'exception de quelques changements mineurs apportés par un éducateur franco-ontarien pour se plier à l'usage canadien, avait été administrée à des élèves francophones et la version anglaise à des élèves anglophones de la province.

Les auteurs ont trouvé, dans les questionnaires de 8e année, des différences dans le niveau de langage, la clarté, le sens et la présentation typographique et dans les questionnaires de 12e année, des différences dans la familiarité du vocabulaire mathématique, le sens, la notation mathématique, les processus cognitifs suscités et la présentation typographique.

Questionnaires de 8e année

NIVEAUX DE LANGAGE

On peut distinguer trois aspects différents dans cette catégorie: la familiarité des mots, la phrase descriptive vs le mot technique et les différences syntaxiques. Les exemples suivants illustrent bien les différences de familiarité des mots.

Dans l'exemple 1, la version française utilise le mot "consommé", peu utilisé par les Franco-Ontariens de cet âge, tandis que la version anglaise utilise le mot familier "eaten". Dans l'exemple 2, le mot "food" est plus familier que le mot "denrée".

Exemple 1

Pour une soirée, on a prévu quatre boîtes de crème glacée de 1 L. Après cette soirée, une boîte est vide, deux sont à moitié pleines et une est aux trois-quarts pleine. Combien de litres de crème glacée a-t-on consommé?

A $3\frac{3}{4}$ L

B $2\frac{3}{4}$ L

C $2\frac{1}{2}$ L

D $1\frac{3}{4}$ L

E aucune de ces réponses

Four 1 L bowls of ice cream were set out at a party. After the party, 1 bowl was empty, 2 were half full, and 1 was three quarters full. How many litres of ice cream had been EATEN?

A $3\frac{3}{4}$ L

B $2\frac{3}{4}$ L

C $2\frac{1}{2}$ L

D $1\frac{3}{4}$ L

E None of these

Exemple 2

Il y a 300 kJ dans 100 g d'une certaine denrée. Combien y en a-t-il dans 30 g de cette denrée?

A 90 kJ

B 100 kJ

C 900 kJ

D 1000 kJ

E 9000 kJ

If there are 300 kJ in 100 g of a certain food, how many kilojoules are there in a 30 g portion of that food?

A 90 kJ

B 100 kJ

C 900 kJ

D 1000 kJ

E 9000 kJ

On rencontre aussi des expressions peu employées en salle de classe.

Dans l'exemple 3, on voit que la version française utilise "droite graduée" au lieu de l'expression courante au Canada français, "droite numérique". La version anglaise utilise l'expression "number line" qui est employée partout dans les classes de langue anglaise.

Exemple 3

A et B sont deux points sur une droite graduée. Les coordonnées de A et B sont -3 et 7, respectivement. Le point C de cet axe, tel que B soit le milieu du segment AC a pour coordonnée:

A -13

B $-\frac{1}{2}$

C +2

D +12

E +17

On a number line two points A and B are given. The coordinate of A is -3 and the coordinate of B is +7. What is the coordinate of the point C, if B is the midpoint of the line segment $\overline{AC}$?

A -13

B $-\frac{1}{2}$

C +2

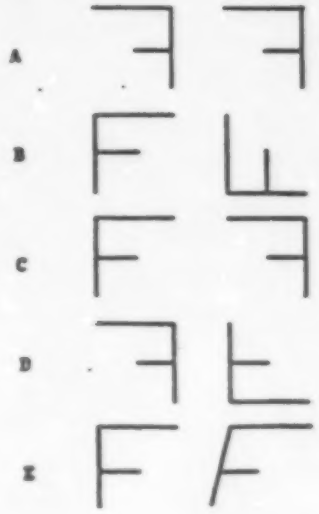
D +12

E +17

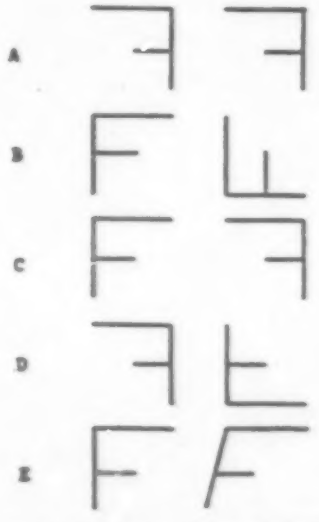
Dans l'exemple 4, la version anglaise utilise le mot "reflection" accompagné du mot familier "flip". La version française ne comporte pas les mots familiers "réflexion" ou "rabattement" que l'on trouve dans les manuels.

Exemple 4

Parmi les figures suivantes, quelles sont celles qui sont symétriques par rapport à une droite?

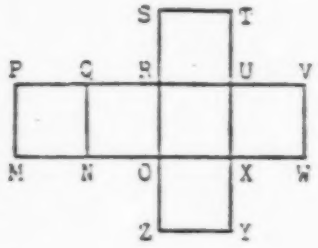


In which diagram below is the second figure the image of the first figure under a reflection (flip) in a line?



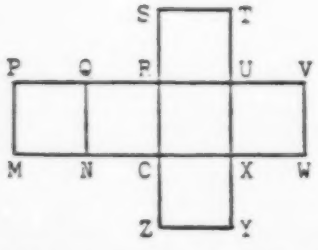
L'exemple 5 illustre l'emploi, dans la version anglaise, d'une phrase descriptive faisant appel à l'imagerie mentale d'un mouvement. La version française utilise le mot technique "développement". Etant donné que cet item a pour but de mesurer l'habileté à visualiser en trois dimensions, la version française comporte donc une difficulté supplémentaire, la connaissance d'un mot technique.

Exemple 5



Ce schéma représente le développement d'un cube. Si on reforme le cube, quels points seront confondus avec le point P?

A Les points Q et S
B Les points T et Y
C Les points W et Y
D Les points T et V
E Les points U et Y



The diagram shows a cardboard cube which has been cut along some edges and folded out flat. If it is folded to again make the cube, which two corners will touch corner P?

A corners Q and S
B corners T and Y
C corners W and Y
D corners T and V
E corners U and Y

On peut aussi trouver des niveaux de difficulté différents par rapport à la syntaxe. Dans l'exemple 6, on apprend dès le début, dans la version anglaise, qu'un point est relié au point (-3, 4) par un segment. Dans la version française, on parle d'un segment qui n'est défini qu'à la fin de la phrase. On peut aussi remarquer que l'absence d'une virgule après "axe de y" rend la phrase ambigué.

Exemple 6

Un des points suivants peut être relié par un segment qui NE coupe NI l'axe des x, NI l'axe des y au point de coordonnées (-3,4). Lequel?

A (-2,3)

B (2,-3)

C (2,3)

D (-2,-3)

E (4,-3)

One of the following points can be joined to the point (-3,4) by a line segment which cuts NEITHER the *x* NOR the *y* axis. Which one?

A (-2,3)

B (2,-3)

C (2,3)

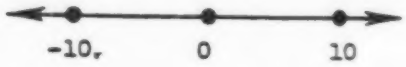
D (-2,-3)

E (4,-3)

CLARTE

Dans l'exemple 7, la version anglaise explicite l'ordre *de gauche à droite*. La version française ne le fait pas.

Exemple 7



Quelle est la suite de nombres écrits dans le même ordre que les nombres de la droite numérique ci-dessus?

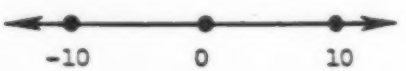
A $0, \frac{1}{2}, -1$

B $0, -1, \frac{1}{2}$

C $-1, -\frac{1}{2}, 0$

D $-1, 0, -\frac{1}{2}$

E $-\frac{1}{2}, -1, 0$



Which of the following sequences of numbers is in the order in which they occur from left to right on the number line?

A $0, \frac{1}{2}, -1$

B $0, -1, \frac{1}{2}$

C $-1, -\frac{1}{2}, 0$

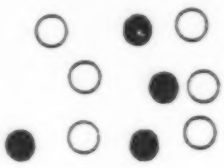
D $-1, 0, -\frac{1}{2}$

E $-\frac{1}{2}, -1, 0$

Dans l'exemple 8, la version anglaise dit bien "*Of all these marbles* what fraction are white". La version française est plus ambigué. La question ne dit pas aussi clairement que l'on compare les billes blanches *à* l'ensemble de toutes les billes. Le mot "dans" est moins fort et laisse peut-être entendre que l'on compare, *dans* cet ensemble, les billes blanches aux billes noires.

Exemple 8

Le schéma montre un certain nombre de billes noires et blanches. Quelle est la proportion de billes blanches dans l'ensemble des billes?



A $\frac{1}{2}$

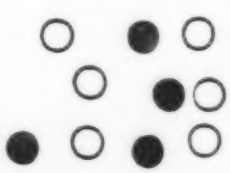
B $\frac{6}{4}$

C $\frac{4}{6}$

D $\frac{6}{10}$

E $\frac{4}{10}$

The picture shows some black and some white marbles. Of all these marbles what fraction are white?



A $\frac{1}{2}$

B $\frac{6}{4}$

C $\frac{4}{6}$

D $\frac{6}{10}$

E $\frac{4}{10}$

Dans l'exemple 9, la question anglaise est directe. La question française n'est pas aussi claire, sa syntaxe étant plus lourde et une virgule étant absente après "AC".

Exemple 9

A et B sont deux points sur une droite graduée. Les coordonnées de A et B sont -3 et 7, respectivement. Le point C de cet axe, tel que B soit le milieu du segment AC a pour coordonnée:

A -13

B $-\frac{1}{2}$

C $+2$

D $+12$

E $+17$

On a number line two points A and B are given. The coordinate of A is -3 and the coordinate of B is $+7$. What is the coordinate of the point C, if B is the midpoint of the line segment $\overline{AC}$?

A -13

B $-\frac{1}{2}$

C $+2$

D $+12$

E $+17$

SENS

Dans l'exemple 10, la question anglaise demande bien le nombre d'équipes *à la fin*. La question française laisse entendre que l'on cherche le nombre total d'équipes formées depuis le début, soit 16.

Exemple 10

Un groupe d'enfants a été divisé en 7 équipes comprenant neuf enfants chacune. Par la suite, le même groupe a été divisé en équipes de 7 enfants chacune. Combien d'équipes ont donc été formées?

A 7

B 8

C 9

D 16

E 63

A group of children was divided into 7 teams with nine in each team. Later, the same group of children was divided into teams with seven in each team. How many teams were there then?

A 7

B 8

C 9

D 16

E 63

PRESENTATION TYPOGRAPHIQUE

La version française, dans l'exemple 11, n'emploie pas d'italiques pour les variables. Cela ralentit la lecture du texte et la rend peut-être pénible. On remarque surtout le "a" de la première ligne et le "y" de la dernière ligne qui auraient avantage d'être en italiques. On peut se demander si la présentation typographique, en ralentissant la lecture, a un effet sur la compréhension de l'item et, dans l'affirmative, si un tel effet se prolonge au rendement sur les items subséquents.

Exemple 11

Une eau gazeuse coûte a cents la bouteille; on remet b cents pour chaque bouteill vide rapportée. Combien Henri devra-t-il payer s'il achète x bouteilles et s'il en rapporte y vides?

A ax + by cents

B ax - by cents

C (a - b)x cents

D (a + x) - (b + y) cents

E Aucune de ces réponses

Soda costs a cents for each bottle, including the deposit but there is a refund of b cents on each empty bottle. How much will Henry have to pay for x bottles if he bring back y empties?

A $ax + by$ cents

B $ax - by$ cents

C $(a - b)x$ cents

D $(a + x) - (b + y)$ cents

E None of these

Exemple 12

Soient f et g les applications de $\mathbb{R}$ dans $\mathbb{R}$ définies par
$f(x) = x - 1$ et $g(x) = (x + 3)^2$
Pour tout x de $\mathbb{R}$, g(f(x)) est égal à:

A $(x - 1)(x + 3)^2$

B $(x + 3)^2 - 1$

C $(2x - 2)^2$

D $(x + 2)^2$

E $x^2 + 8$

The functions f and g are defined by $f(x) = x - 1$ and $g(x) = (x + 3)^2$.

$g(f(x))$ is equal to

A $(x - 1)(x + 3)^2$

B $(x + 3)^2 - 1$

C $(2x - 2)^2$

D $(x + 2)^2$

E $x^2 + 8$

Questionnaires de 12e année

FAMILIARITE DU VOCABULAIRE MATHEMATIQUE
Dans l'exemple 12, la version française utilise "applications", un mot peu employé au secondaire en Ontario et correspondant au mot anglais "mappings". La version anglaise utilise le mot courant "functions".

SENS
Dans l'exemple 13, la réponse B n'a pas de sens en français.

Dans l'exemple 14, la question anglaise dit "only", ce qui modifie un peu le sens de la phrase.

Exemple 13

Si $\vec{r}$ est un vecteur qui peut s'écrire cos Q $\vec{i}$ + sin Q $\vec{j}$ où, $\vec{i}$ et $\vec{j}$ sont des vecteurs unitaires parallèles à l'axe des x et y respectivement alors $\frac{d\vec{r}}{dQ}$ est:

A Un vecteur perpendiculaire à $\vec{r}$

B Un vecteur faisant un angle Q avec l'origine

C Un vecteur colinéaire à $\vec{r}$

D Un nombre égal à la norme de $\vec{r}$

E Un nombre égal à la plus grande valeur de la norme de $\vec{r}$

$\vec{r}$ is a vector which can be expressed as cos θ $\vec{i}$ + sin θ $\vec{j}$, where $\vec{i}$ and $\vec{j}$ are unit vectors parallel to the x- and y-axes respectively.

$\frac{d\vec{r}}{d\theta}$ is

A a vector perpendicular to $\vec{r}$

B a vector making an angle θ with $\vec{r}$

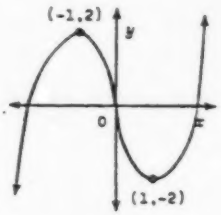
C a vector parallel to $\vec{r}$

D a scalar equal to the distance $\vec{r}$ from the origin

E a scalar equal to the maximum value of the length of $\vec{r}$

Exemple 14

Ceci est la représentation graphique d'une fonction polynôme du 3ème degré f.



f peut être définie par:

A $f(x) = -x^3 - x$

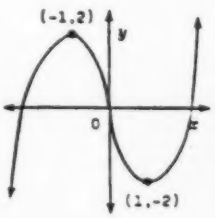
B $f(x) = x^3 - 3x^2$

C $f(x) = x^3 - 3x$

D $f(x) = 3x^3 - x$

E $f(x) = x^3 + 3x^2$

The diagram shows the sketch of the graph of the cubic function f.



The function f could only be given by $f(x)$ is equal to

A $-x^3 - x$

B $x^3 - 3x^2$

C $x^3 - 3x$

D $3x^3 - x$

E $x^3 + 3x^2$

NOTATION MATHEMATIQUE

Dans l'exemple 15, la version anglaise utilise la notation commune "ln" pour le logarithme népérien tandis que le texte français utilise "log", ce qui, dans les manuels utilisés en Ontario, représente le logarithme décimal.

Exemple 15

$$\int_0^1 \frac{12x}{(2x^2 + 1)^2} \text{ est égal à:}$$

A -2

B -1

C 2

D Log 2

E 3 Log 3

$$\int_0^1 \frac{12x}{(2x^2 + 1)^2}\,dx \text{ is equal to}$$

A -2

B -1

C 2

D ln 2

E 3 ln 3

Dans l'exemple 16, la version française utilise la notation $[2\pi, 4\pi]$ qui n'est à peu près pas utilisée au secondaire en Ontario, tandis que la version anglaise utilise la forme courante $2\pi \leq x \leq 4\pi$.

Exemple 16

Dans l'intervalle $[2\pi, 4\pi]$, l'ensemble des solutions de l'équation $\sin x = \frac{1}{2}$ est:

A $\{\frac{7\pi}{3}, \frac{8\pi}{3}\}$

B $\{\frac{7\pi}{3}, \frac{11\pi}{3}\}$

C $\{\frac{13\pi}{6}, \frac{17\pi}{6}\}$

D $\{\frac{13\pi}{6}, \frac{19\pi}{6}\}$

E $\{\frac{13\pi}{6}, \frac{23\pi}{6}\}$

In the interval $2\pi \leq x \leq 4\pi$, the solution set of the equation $\sin x = \frac{1}{2}$ is

A $\{\frac{7\pi}{3}, \frac{8\pi}{3}\}$

B $\{\frac{7\pi}{3}, \frac{11\pi}{3}\}$

C $\{\frac{13\pi}{6}, \frac{17\pi}{6}\}$

D $\{\frac{13\pi}{6}, \frac{19\pi}{6}\}$

E $\{\frac{13\pi}{6}, \frac{23\pi}{6}\}$

ERREURS TYPOGRAPHIQUES

Dans l'exemple 17, le signe d'intégrale est absent du texte français. Dans l'exemple 18, c'est le signe de radical qui est absent.

Exemple 17

$(x - 1)^2$ dx est égal à:

A $2(x - 1) + c$

B $\frac{1}{2}(x - 1)^2 + c$

C $\frac{1}{3}(x - 1)^3 + c$

D $\frac{1}{3}(x^3 - x) + c$

E $\frac{(x - 1)^3}{x} + c$

$\int (x - 1)^2\, dx$ is equal to

A $2(x - 1) + c$

B $\frac{1}{2}(x - 1)^2 + c$

C $\frac{1}{3}(x - 1)^3 + c$

D $\frac{1}{3}(x^3 - x) + c$

E $\frac{(x - 1)^3}{x} + c$

Exemple 18a

$\sqrt{600}$ est environ égale à 24,4949; une valeur approchée de 600 avec 2 CHIFFRES SIGNIFICATIFS est:

A 24

B 24,49

C 24,5

D 24,50

E 25

Exemple 18b

Given that $\sqrt{600}$ is approximately 24.4949, an approximation to 2 SIGNIFICANT DIGITS for $\sqrt{600}$ is

A 24

B 24.49

C 24.5

D 24.50

E 25

Dans l'exemple 19, le zéro de la 2e ligne est mal écrit et ressemble au signe d'intersection de la théorie des ensembles. De plus, le signe de multiplication est absent.

Exemple 19

Si a est un chiffre, on note ∩.a le nombre qui a pour représentation décimale illimitée 0.aaaaaa... Alors $0.\overline{7} \quad 0.\overline{4}$ est égal à:

A 1.1

B $1.\overline{1}$

C 1.2

D $1.\overline{2}$

E 1.3

If a is a digit, let $\overline{0.a}$ represent the number with decimal expansion $0.aaaaaa\ldots$. What is $0.\overline{7} + 0.\overline{4}$?

A 1.1

B $1.\overline{1}$

C 1.2

D $1.\overline{2}$

E 1.3

Continued on page 41

Continued from page 38

Discussion

La détection des biais dans les tests est un problème fort complexe. On peut l'entreprendre par une analyse logique suivie d'une analyse empirique statistique.

> The entire process of establishing that sets of items are unbiased is the same as the process of construct validation of the test. For tests or items, this requirement is larger than strictly actuarial or statistical validity. The demands for logical validity include not only verification of the match between items and constructs but also a coherent theory regarding relations among variables, expecially between the test and criterion performance. Logically deduced patterns must then be confirmed empirically, in the first case by internal item bias methods and in the second by external relations.
> [Shepard, 1982, p. 26]

Les auteurs ont fait ressortir les différences qui peuvent paraître dans un test polyglotte et qui ont échappé à des experts dans le procédé classique de traduction-retraduction. Ces différences ne sont pas nécessairement toutes des biais, mais elles en soulèvent la possibilité. Des recherches empiriques sont nécessaires pour confirmer la présence ou l'absence di biais. Il serait nécessaire de comparer le rendement d'élèves avec une version corrigée des tests, à celui obtenu avec la version déjà utilisée.

Ces différences font aussi ressortir la difficulté de comparer les rendements obtenus dans les différents pays qui ont participé à la seconde enquête internationale sur l'enseignement des mathématiques sans vérifier si de telles différences existent entre les autres versions des tests et si de telles différences sont des biais. Il est clair qu'une comparaison doit être faite, item par item, par des experts qualifiés, avec des critères bien établis. Les auteurs suggèrent des critères déjà soulevés, soit le niveau de langage, la clarté, le sens, la présentation typographique et les processus cognitifs suscités. Des recherches pourraient en établir d'autres.

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